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The official figures for the production of coal in Great Britain in 1899 show a total for the year of 220,085,303 long tons, which is somewhat greater than had been expected. The output in 1898 was 202,042,243 tons, so that the increase last year was 18,043,060 tons, or 8.9 per cent. All the more important districts showed some increase, but South Wales furnished more than half the gain. It will be remembered that the long strike of the Welsh miners in 1898 limited the output in that year. Consumption in 1899 was very large, and the increased production was accompanied by a general rise in prices.

In the "Engineering and Mining Journal," January 6th last, we estimated the coal production of the United States at 244,581,275 short tons. This is equal to 218,376,138 long tons, which is less than the British output by 1,709,165 tons. The revised figures, however, so far as received, are generally a little over our early estimates; and our production when fully made up will be very close to that of Great Britain. The difference—either above or below—will be very small.

The total production of the precious metals, lead and copper in Colorado has been estimated by the Denver Mint, and the figures by counties are given on another page. The total values for the State—substituting the commercial value of silver for the coinage value given by the Mint—are: Gold, $26,265,487; silver, $13,755,416; lead, $6,051,156; copper, $1,975,518; total, $48,047,577. This is an excellent showing for the State; and it must be remembered that to this great amount there must be added iron ore, manganese ore, zinc ore, coal and coke to make up the total value of its mineral industry.

In the "Engineering and Mining Journal," January 6th last, our Cripple Creek correspondent estimated the total production of that district at $15,662,400. Some of our Colorado contemporaries criticised this statement severely at the time, claiming that the amount given was too low by $4,000,000 to $5,000,000. We find now that the total for Teller County, in which Cripple Creek is situated, is given by the Mint statement at $15,707,272, the gold production being $15,658,254. When it is remembered that the output for the month of December was necessarily estimated, it will be seen that our statement was remarkably near the actual result. The estimates then presented of Leadville production were also very close to the figures now presented.

We notice that the transportation companies and agencies which have begun to work up the Nome boom very actively, are already beginning to add to the attractions they offer reports of "inexhaustible gold deposits" on the Siberian coast. We have even heard rumors of the organization of parties with the intention of exploring the coast regions of Northeastern Siberia, which are not very far by sea from Cape Nome. We think that a strong caution is needed for any persons who may entertain such intentions. It is not impossible that gold may be found in the region mentioned; but the country is even more difficult, so far as climate and natural conditions are concerned, than the Alaskan coast region. Moreover—and this is the most important point—the Russian Government imposes very strict regulations on prospecting and mining for gold in its territory, and Russian officials have very summary methods of treatment for those who have not complied with the requirements of the law. They have plenty of force at their command and do not hesitate to use it. Transportation into the interior is the lightest penalty which the prospector who undertakes to land and work without proper authority is liable to receive. Once in the interior of Siberia escape or rescue is practically impossible. Any project for Siberian exploration which has not the backing of proper Government permits and passports is an extremely dangerous undertaking, and should be carefully avoided.

The question of rights to mine under water in the Nome District in Alaska appears likely to cause some trouble. The success of the beach mining there has led to the belief that gold can be found in the sands beyond low-water mark, and certain parties are preparing to test the question this season. Attention was recently called to this matter in the United States Senate, and in answer to a question the Secretary of War replied that some permits had been granted to applicants to conduct operations along the shore beyond the low-water limit. The Secretary reported that he had granted all such permits thus far applied for, the only question being considered being whether the work would interfere with navigation. He did not believe that he had any right to make any other condition. As Nome faces on the open sea and the slope of the beach is too gradual to permit vessels to come close to shore, it does not appear that navigation could be hindered; and the inference is, therefore, that all applicants will receive permits.

There are, however, some important points still to be considered. Unless these permits carry exclusive rights to a defined territory they are of little value. It is not clear, however, whether they carry such rights; nor do they give any right to the beach above low-water, though the beach must be the basis of operations. Under the existing laws

claims cannot be located nor patents issued on the beach. The only rights there are of actual possession and occupancy, and these have been recognized by general consent. When the War Department permits reach Nome serious difficulties are very likely to arise.

The report of the Lehigh Coal and Navigation Company for 1899 shows that a remarkable—and we believe unprecedented—proportion of the output of anthracite coal from its collieries and breakers was of what are known as the small or steam sizes. It is not many years since chestnut was the smallest marketable size of anthracite, but greater care in separation and saving the coal, produced first pea, then buckwheat, and then No. 2 buckwheat, or rice coal, making three market sizes below the chestnut. In 1899 the proportion of these reported by this company was: Pea, 15.16 per cent.; buckwheat, 17.33; No. 2 buckwheat, 17.93; total, 50.42 per cent., or a little over one-half. These steam sizes bring a lower price than the larger sizes because they are not employed for household purposes, and must be sold for factory use in competition with bituminous coal. There is really no reason why pea coal, at least, should not be used as a domestic fuel, if grates adapted to its use were introduced; just as chestnut came into demand years ago, when new stoves were introduced which could conveniently use that size. The Lehigh Coal and Navigation Company last year made over 910,000 tons of small coal. In 1889 the proportion was 32.34 per cent. This shows the increased care taken in sizing anthracite and saving as much as possible for market.

We may note further that out of a total of 1,807,733 tons mined, the Lehigh Coal and Navigation Company used 131,699 tons, or 7.3 per cent. of the total, in operating its collieries. This is close to the average which is generally accepted as the proportion of anthracite used at the mines.

The first report and statement of accounts of the British America Corporation, Limited, the company which directs Mr. Whitaker Wright's operations in British Columbia, has just been issued. It covers the period of two years from the incorporation of the company in October, 1897, to November 28th, 1899. For reasons best known to the directors no report was issued at all last year, and the shareholders and public have been considerably perturbed by the continued absence of a definite statement of the condition of the company's affairs. Now that a report is at last issued, it is so meager that it conveys little or no information. The most important item is that sufficient cash profit has been made to warrant the distribution of £150,000 as dividend on the capital of £1,500,000, but 10 per cent. for a period of two years is not a very satisfactory return for a speculation of this kind.

The directors report that they abandoned all their Klondike business soon after flotation. None of the options on gold claims were exercised, and the transport and trading businesses acquired were soon found to be too risky. Altogether it is estimated that a loss of £50,000 represents the results of the Klondike ventures. The directors report that on the other hand the business of the company in British Columbia has been satisfactory and profitable, and they claim that they own or control many of the best mining properties hitherto discovered in that province. On referring to the balance sheet, however, it does not appear that any return has been made by these properties themselves, but that the profits are entirely derived from the acquirement by purchase or otherwise, and subsequent resale, of shares in other companies. The information given in the balance sheet and profit and loss account is of the very barest, and the names of the companies in which the corporation holds shares are not specified. It may be mentioned, however, that the profits are made by floating all the properties owned as subsidiary companies, and selling for cash the blocks of shares acquired as purchase price or in consideration for working capital supplied. Thus in the report of the corporation no mention has to be made of the amount of money spent in developing the various properties, a point on which we should very much like to be enlightened. It is probable that the larger part of the profit accruing during this period under review has been obtained by the sale of Le Roi shares. By the way, it is now a year and a quarter since the Le Roi Company was floated in London, and yet we have heard nothing of any dividend nor report, although we were promised a monthly profit of £20,000.

EL ORO MINING AND RAILWAY COMPANY, LIMITED.

A flotation of some importance has just been effected in London by the Exploration Company. This is El Oro Mining and Railway Company, Limited, which has been formed to operate the well-known El Oro Gold Mine, situated 100 miles northeast of Mexico City, together with the railway which connects the mine with the Mexican National. This mine and railway have been acquired from the American owners for $3,307,000 and $1,000,000, respectively, part of which payment was made in cash and part in shares, the total cost to the English company being £886,072. The capital of the English company is £1,000,000, but at present it is not contemplated to provide more than £30,000 as working capital. The whole of the requisite money has been subscribed by the Exploration Company and its friends, and the prospectus has not been issued publicly. A prospectus has been printed, however, and is given for public information to any one who may ask for it. This is a departure on the part of the Exploration Company which is to be commended, and is a much better plan than their old one of not issuing any prospectus at all.

The properties have been examined by Mr. R. T. Bayliss, Mr. John Hays Hammond and Mr. C. A. Molson. They estimate that on the San Rafael vein, at the 186-foot level, there is a continuous ore body 750 feet long by 20 feet wide, containing 245,000 tons, averaging $21.88 per ton, while in a branch vein there are 35,000 tons averaging $35. This ore is calculated to yield a net profit of £700,000, reckoning on an 80 per cent. extraction and a cost of mining, milling, etc., of $6 per ton. There is also much unexplored ground in continuation of the vein, and large bodies of lower-grade ore which is capable of treatment.

It will be remembered that in March, 1899, the Exploration Company attempted to float the Mexican Esperanza Gold Mine, Limited, to work the Esperanza Mine, which is situated near El Oro, but that the flotation had to be abandoned owing to Mr. Ross Browne, who had examined it, protesting that the capital was higher than the mine warranted. After this failure the Exploration Company desired to obtain the mine on a different basis, and in their negotiations on the subject approached the American owners of El Oro with a view of acquiring their property. After this flotation of El Oro we shall no doubt hear that the Esperanza has been acquired again. It is noteworthy that the board of directors of El Oro Mining and Railway Company is practically identical with that of the Mexican Esperanza.

ANTHRACITE COAL PRODUCTION.

The official figures for the shipments of anthracite coal in 1899 are now accessible, and we give the statement below, supplemented by the usual addition for consumption and sales at mines; the report for 1898 is given in comparison. The figures are in long tons:

	1898.		1899.		Increase.
	Tons.	Per ct.	Tons.	Per ct.	Tons.
Philadelphia & Reading....	8,219,814	19.6	9,683,503	20.3	1,463,689
Lehigh Valley.....	6,885,577	16.5	7,588,932	15.9	703,355
Central of New Jersey.....	4,626,386	11.0	5,392,550	11.1	766,164
Delaware, Lackawanna & Western	5,795,540	13.8	6,372,401	13.5	576,861
Pennsylvania Coal Co.....	1,854,515	4.4	2,347,061	4.9	492,546
Delaware & Hudson and Lackawanna	5,613,186	13.4	6,430,050	13.6	816,864
Other lines.....	8,904,733	21.3	9,850,706	20.7	945,973
Total shipments.....	41,899,757	100.0	47,665,203	100.0	5,765,452
Used and sold at mines....	5,242,904	.....	6,369,021	.....	1,126,117
Total produc., long tons	47,142,655	.....	54,034,224	.....	6,891,569
Total production, metric tons.....	47,896,937	.....	54,898,772	.....	7,001,835

The large increase of 14.6 per cent. in 1899 made the output almost the largest ever reported. In some degree the increase was due to the unusual severity of the weather in the opening months of the year, which increased the demand along the seaboard and in the section where anthracite finds its chief market. To a greater extent it was the result of the general prosperity and activity in business which made a large demand for the steam sizes sold for manufacturing purposes, besides permitting more liberal use of fuel for domestic purposes.

The distribution of the tonnage does not show any marked changes. All the companies shared in the increase. The course of prices also showed that the larger production was not the result of any attempt to force coal on the market, but was in response to actual demand for consumption.

COPPER QUOTATIONS.

Our recent note on copper quotations, and the change made in our market reports in substituting electrolytic for Lake copper as the standard in presenting average prices, have excited a great deal of comment in the Lake Superior Region, as might have been expected. In another column we publish some criticism from a gentleman who is connected with one of the most important Lake companies, and who is familiar with the refining and preparation of Lake copper for market. In one respect our correspondent has, we think, misunderstood our remarks and the reasons which we gave for making the change referred to. It seems to us that electrolytic copper is the safer and more natural standard of prices on which to base contracts for the purchase or sale of ores or furnace material, and this without reference to relative quality. Electrolytic constitutes by far the greater part of the copper sold. The production of the Lake Superior companies last year was under 30 per cent. of the total output of the United States, and even of this a small portion is already refined electrolytically. Electrolytic copper has also the more stable value, and is less liable to fluctuations than the smaller quantity of Lake. There was a striking illustration of this

during the past winter when at one time Lake copper commanded a price from 1½ to 2 cents above electrolytic, simply because the market was, for the time, bare of supplies, and immediate deliveries could be secured only by the payment of this premium. As soon as metal began to come forward, the difference almost disappeared, falling to ¼ cent, or less, which is not far from the normal difference. In other words, the electrolytic copper furnishes the bulk of the market, while Lake is a special brand preferred for certain purposes, but necessarily limited in quantity, and liable to greater fluctuations; electrolytic is the copper sold for all classes of electrical work, which now furnishes so large a part of the demand for the metal.

With regard to our correspondent's remarks as to the purity of Lake copper as refined, they are certainly correct as far as his own works are concerned, but that does not affect the accuracy of our statements. There is no doubt that as depth increases in the Lake Superior mines the proportion of impurities increases. The iron, which constitutes a considerable portion of these impurities, can be eliminated, in refining, to a very large extent, but the arsenic which also occurs is much more difficult to dispose of, and has quite as serious effect upon the conductivity of the copper. In the Quincy and the Osceola mines there is little or no arsenic in the copper, and their metal is, therefore, sold largely in the form of wire bars; in the deeper mines, such as the Tamarack and that from the deep level of the Calumet & Hecla, the arsenic is much more in evidence and the copper from those is not made into wire bars, but is sold in ingots and other forms.

After all, the electric conductivity is by far the most accurate and delicate test for the purity of copper; and the fact that Tamarack and the deep-level copper from the Calumet & Hecla is not used for electric conductors is sufficient evidence of the accuracy of our general statement, though we might have been more specific as to the impurities that affect the conductivity of some of the Lake brands.

In considering the question of prices alone, we must suggest further that the production of Lake copper being necessarily confined to a small district, the increase cannot be very rapid. No doubt the explorations and new openings now in progress will bear fruit in due course of time, and there will be some gain in production. The great bulk of the increase in the world's supply of copper must come from other regions than this, however, and from other countries; where the larger part of it will be electrically refined. At the present time the market price of electrolytic is, in some cases, less than ⅛ cent per pound, but in other cases, owing to the limited supply of Lake and to the fact that high freights have to be paid until Lake navigation opens, the difference is greater than ⅛ cent.

NEW PUBLICATIONS.

"Iowa: Eighth Biennial Report of the Bureau of Labor Statistics, 1897-1898." W. E. O'Bleness, Commissioner. Des Moines, Iowa; State Printer. Pages, 108; illustrated.

This report contains much valuable statistical matter relating to the industries of Iowa. The duties of the Commissioner include not only the collection of statistics, but a general supervision of manufacturing establishments, and the commissioner makes a number of recommendations as to boiler inspection, the protection of machinery, and similar matters. Some statistics of coal mining are included, but the majority of the figures relate to the different manufacturing establishments of the State. An interesting chapter is devoted to manual training in schools.

"Compendium des Gasfeuerung in ihrer Anwendung auf die Hüttenindustrie." By Ferdinand Steinmann. Leipzig, Germany; Arthur Felix. Pages, 120; with atlas of plates.

This book is intended as a summary of the progress made in the use of gas fuel in the metallurgical industry. It is divided into two parts, the first being general and treating of the use of gas fuel, of gas generators and producers, and describing different classes of producers with accounts of the different forms of furnace which have been devised for burning gas. The second part is devoted to the special applications in iron and steel making, and in glass making, and treats at much length of the different forms of steel and other furnaces and of reverberatory and regenerative furnaces. As a summary of the progress made up to date, it is interesting, and the subject is worked out with German thoroughness. We must, however, protest against the bad practice of publishing all the illustrations in a separate volume or atlas, which doubles the labor of reading the book, and is in every way a great drawback to its excellence.

"New Jersey: Twenty-second Annual Report of the Bureau of Statistics of Labor and Industries, 1899." William Stainsby, Commissioner. Trenton, New Jersey; State Printers. Pages, 354.

The statistics given in this volume convey some idea not only of the extent, but of the great variety of the manufacturing industries carried on in the State of New Jersey. Few States have so long a list. The report contains four parts, the first giving statistics of manufactures, with a special study of the silk industry, which is extensively carried on in Paterson and elsewhere. The second part treats of strikes and lockouts with particular reference to the long strike of the glass workers in South Jersey. It also includes a chapter on company stores, and their effect on various branches of manufacture. Part third includes a study of trades unionism and its influence in various trades, and a chapter on the cost of living in New Jersey. Part fourth gives the legislation relating to labor enacted at the last session of the State Legislature, and also the decisions of the higher courts of the State in cases affecting the interests of labor. The report contains much valuable information.

"Copper Manual; Copper Mines, Copper Statistics, Copper Shares and a Summary of Information on Copper." Volume II., 1899. By D. Houston & Company. New York; D. Houston & Company. Pages, 380; illustrated. Price, $3.

This volume is in part made up by a condensation of the monthly circulars issued by Messrs. Houston & Company to which has been added a variety of information, including production and exports of copper, copper production in foreign countries and accounts of the different copper mining companies in the United States, with a few of the leading foreign companies. These accounts are in some cases brief, including only statements of the location of the company with a list of its officers, while in others they are much more extended, and give some description of the mines and works. The latter have generally been carefully prepared, and are of considerable interest. The list includes a number of the new companies whose mines are only in the prospect stage as yet, and we regret to say that one or two have crept in which ought not to appear in such a list. In addition to these accounts tables are appended showing the average prices of copper in New York and London, and the fluctuations of copper mining shares. The book is illustrated by half-tone engravings of several different mines and smelting works; and by a number of portraits of officers of prominent copper companies. It is a convenient manual for reference, and will be doubtless appreciated by the copper trade.

BOOKS RECEIVED.

In sending books for notices, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review on another page of the Journal.

"Estudistica Comercial de la Republica de Chile, Correspondiente al Ano de 1898." Prepared by Wenceslao Escobar, Chief of Bureau. Valparaiso, Chile; State Printer. Pages, 754.

"Pacific Coast Electric Transmission Association. Proceedings of Third Annual Convention, 1899." San Francisco; published by the Association, George P. Low, Secretary. Pages, 116; illustrated.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials will only be published when so requested.

Letters should be addressed to the MANAGING EDITOR.

We do not hold ourselves responsible for the opinions expressed by correspondents.

Lake and Electrolytic Copper.

Sir: I have read with much interest your little editorial on Lake and electrolytic copper quotations, and have also seen and heard something of the talk the Lake people have been making about it. As far as your remarks go, I think that you are wholly correct, but in one respect I do not think that you go far enough. Your recent quotations show a difference of about ¼c. between Lake and electrolytic prices, although most people are inclined to think that ⅛c. is enough, and in fact there are a great many people who do not want Lake copper even at the same price as electrolytic. European consumers and dealers all claim that ⅛c. is the outside difference normally. I can assure you that there are Lake people who admit that ⅛c. is all the difference that ought to be made, and on the other side Mr. W. A. Clark, who is the largest single producer of electrolytic claims only the same difference. I know that there are plenty of people who would exchange Lake for electrolytic at a premium of ⅛c. very willingly. D. N.

New York, March 28, 1900.

Sir: In your valuable Journal of March 17th I notice your editorial article in relation to electrolytic copper as the standard of values, and putting Lake copper in the subordinate place. If it is the correct thing to make a second-class article the standard of values, simply because the quantity is larger, then you are right; but if the standard of values should be placed on the best article in the market, you are wrong. What I take especial exception to is your statement as follows: "It is a well-known fact that the percentage of iron in Lake copper has increased in recent years, partly because the copper is found to contain more of this impurity as the mines increase in depth, and partly because of the closer concentration, which saves more iron as well as copper."

Now, I am connected with the Quincy Smelting Works and the Calumet & Hecla Smelting Works of South Lake Linden, and can only speak of the quality of the copper produced at these works. The iron contained in the copper produced at these two works is less than one-third of the average in Lake copper produced 5 years ago; and less than one-sixth of the amount contained in average Lake copper produced 10 years ago.

There is no proof that the amount of iron increases as the mines increase in depth, and even if it did, it would make no difference in the result. Whatever amount of iron there may be is an oxide of iron, and would combine directly with the slags in the process of smelting, and would add no metallic iron to the copper. The same is true to a large extent in the closer concentration in the stamp mills. There may be a little more metallic iron in the mineral by this closer concentration, but this would only increase the labor in refining to obtain the same result.

It is only the metallic iron in the copper that we have to contend with, and we have succeeded in reducing this to a mere trace, up to 0.016 per cent., which is so little that it has no influence in the value of working qualities of the copper. If there is any Lake copper produced at this

time that shows a larger percentage of iron than it did in former years it is owing to the ignorance of the refiner, or it is left there by design.

There has been a persistent and determined effort to throw discredit upon Lake and to bolster up electrolytic copper, but Lake has maintained its reputation as the leading brand for 50 years, and I think will for 50 years to come, no matter what place it occupies in the tables. There is an evenness in the working qualities of Lake copper and a strength of fiber in the metal that, in my opinion, will never be attained in electrolytic, and this working quality and strength of fiber is transmitted in a large measure to all alloys made from Lake copper. Lake copper is by no means given up for electrical purposes, as the two works here received orders for over 4,000,000 lbs. of wirebars since the close of navigation, and at a higher price than that for which electrolytic has been sold.

Jas. R. Cooper.

Houghton, Mich., March 21, 1900.

The Cochiti District, New Mexico.

Sir: Cochiti is the name given to a mining camp in Bernalillo County, New Mexico, on the west side of the Rio Grande River, 35 miles due west from Santa Fe. It obtains its name from the principal stream in the region, which in turn takes its name from a tribe of Pueblo Indians near by. Large veins of quartz had long been known to exist here, but they were supposed to be barren until 1893, when prospectors found ore which was rich. The discovery was followed by the rapid settlement of the region. Perhaps no part of the Territory has since that date attracted more attention from prospectors and investors.

The known good ore veins are confined to an area about 3 by 4 miles in extent. Through this region extend three canyons, from whose precipitous, rocky sides the mountains rise to a height of 500 to 1,000 ft. The topography made the camp difficult of access and roads costly. It also makes it easy to work most of the claims to a depth of 500 ft. or more by adit levels. Necessary roads are now completed into each canyon. Good pine timber is fairly abundant. Water is scarce, the streams in the three canyons going almost, or entirely, dry during half of the year. The altitude ranges from 7,000 to 8,000 ft. and the climate is very nearly perfect.

The entire region is of volcanic origin, consisting of porphyritic andesite, diorite, basalt, phonolite, breccia, lavas and conglomerate. There are no local exposures furnishing evidence of the age when the volcanic overflows took place; but along the Rio Grande River some miles north, erosion has exposed the underlying rocks, which are Jura-Trias. The depth of the volcanic overflow probably varies from 2,000 to 5,000 ft. Four distinct overflows are recognizable, the last being of mud, which took place in historic times. While it has hardened into rock, human foot-prints are found in it. The lower overflow, in places metamorphosed, is hornblende andesite, answering well the description of diorite which has cooled quickly. The diorite and basalt are found as dykes, and the phonolite, which is rare, in thin seams, usually on one side of the large dykes. The country is much broken, and considerably faulted by these dikes.

The veins are altered dikes, the material, in every case where ore is found, having been a gray porphyry, which was clearly replaced by metasomatic action. They are found only in the older andesite. Their general course is north and south, parallel to the axis of the main range, distant 4 to 8 miles. At least three of these dikes are traceable for 4 miles. They vary in width from 10 to 100 ft., and often have spurs or branches which are traceable for 1,000 ft. or more. In places the porphyry was entirely replaced by quartz, and in others only partially. It is no uncommon thing to break open a large rock and find its core to be a piece of porphyry, the ore surrounding it in concentric rings, as regularly deposited as they are ever seen in an agate.

As a rule, the ore follows closely one wall of a vein, usually the west wall, the pay streak varying in thickness from a few inches to several feet, and occasionally swelling to a thickness of 40 ft. or more, reaching bonanza dimensions. As the pay ore is mined, without sorting, it assays from $12 to $15 per ton, the value being about 40 per cent. gold and 60 per cent. silver. There are, however, some exceptions to this rule, where 90 per cent. or more of the value is gold. Occasionally there are bodies of ore carrying practically no value except gold found in veins whose usual value is principally silver. The ore is almost a pure quartz, from 85 to 95 per cent. being insoluble. It is an arsenical pyrite, carrying a trace of tellurium. Stephanite is not unfrequently found, it always being a rich ore. Gold or silver are rarely visible to the eye, and free gold can seldom be panned; but if the pulverized ore be treated with dilute nitric acid it pans freely. The deepest development in the camp thus far is 700 ft. At that depth the veins are entirely dry, and there is no change in the character of the ore, though the gold shows a slight increase and the silver a corresponding decrease, the total value averaging slightly more than on the surface.

There are two mills in the camp treating ore, one having been in operation for three years and the other almost two, while a third has just been completed. One of the mills has a capacity of 300 tons daily and the other of 15 tons. The larger uses the McArthur-Forrest cyanide method and the smaller the Pelatan-Clerici. The Cochiti Gold Mining Company, a Boston corporation, has just completed an electric transmission plant 31 miles long, with a capacity to transmit 800 H. P. The dynamos are set at the Madrid coal banks and are operated by steam power. It will be used to operate the company's mill and hoisting plant at the mine. The Navajoe Company, a Maine corporation, has announced that it will this season build a 300-ton mill and construct an electric tramway 1½ miles long to carry its ore from the mine to the mill.

P. C.

Cochiti, N. M., March 17, 1900.

Gasoline Engines for Boring Wells.

Sir: I think that the answer given in your issue of March 3d, in relation to gas and gasoline engines for boring wells is misleading and should be corrected. Gas and gasoline engines are largely used for pumping wells after they have been drilled, but they are absolutely worthless for the purpose of drilling. One not thoroughly acquainted with the art of drilling, knowing that gas and gasoline engines will give the necessary power, might at first discredit this statement; nevertheless it is true. In the great oil belt of Pennsylvania and West Virginia, where natural gas can often be had for nothing, and, owing to bad roads and mountainous country, coal often costs heavily, not a single gas engine is used for drilling. They have been tried over and over, but always with failure. Now it is true that small treadle-motion machines, which run so slowly that the drilling tools have time to take a rest between strokes, can be run with gas or gasoline engines, but when drilling tools are run as they should be that source of power is not in it. The reasons are numerous:

1. In drilling, a reversible power is as absolutely necessary as one on a locomotive. A small locomotive could be backed by hand power, and the machinery operating a small, light set of drilling tools could be backed by hand and a well eventually drilled, but it would be a bone-breaking task. The reason for the above is obvious when it is remembered that drilling tools frequently stick fast and must be jarred loose. A one-way engine would simply stop when the tools stick, and the machinery would have to be backed off to get a run at tools; and if the tools are not jarred loose at the first effort the machinery would have to be backed off again and again. Often hundreds or even thousands of blows are necessary to start the lodged tools. A driller never knows his tools are going to be fastened until they are fastened, and when they stick fast either the engine must stop or something will be broken. When a gas or gasoline engine is thus stopped, the workman must go through the whole process of restarting the engine before he can proceed, and if it required 1,000 blows to start his tools, he would have to restart the engine 1,000 times, and he would have to disconnect the engine from his machine each time.

2. The speed of a gas or gasoline engine cannot be regulated with sufficient accuracy. To drill successfully, especially when using cable tools, and in holes over 100 ft. deep, the operator must be able to give his machinery just that speed which will allow the drill to strike the bottom and be then lifted before the vibration caused by the blow ceases. This is called drilling "on the spring of the line," and the amount of spring in the drilling cable is governed by the speed of the lift and fall, and these in turn are controlled by the speed of the driving power. If it be a little too slow, the drill bit will strike; if a little too fast, the tools will be caught by the returning cable before the bit strikes, endangering the cable, the tools and machinery. At this point it should be remembered that, owing to the cut-up drillings, and a hundred other things, the speed at which the drill will fall is constantly changing, and a gasoline engine, in order to operate a drill, would have to be made capable of constant change of speed, as well as exact regulation.

3. In drilling, and up to the limits of a maximum speed, the slower the drill is raised the more power is required to raise it each stroke. As is well known, the efficient power or force of a gasoline engine per stroke of the engine, diminishes with the speed of the engine. The very reverse of this is true with the style of steam engine suited to drilling. No governors are used on steam engines for drilling; they are operated like a locomotive and controlled entirely by the throttle. This method of operating a gas or gasoline engine is, of course, in its present state of development, impossible.

Were it not for taking up space in your valuable paper, we could give many other reasons why wells cannot be drilled successfully with gas or gasoline engines. The writer has worked for years endeavoring to overcome these difficulties, but up to date they have not been solved. We are aware that drilling outfits are made and sold for this purpose to people who do not know the reasons why they cannot be used, but we also know that the disgusted purchasers have lost faith in humanity when they attempted to operate them.

R. M. Downie.

Beaver Falls, Pa., March 9, 1900.

PIG IRON PRODUCTION IN GERMANY.—The output of the German blast furnaces in January was as follows, in metric tons: Foundry iron, 122,045; forge iron, 140,183; Bessemer pig, 39,101; Thomas (basic) pig, 357,183; total, 658,512 tons. In January, 1899, the output was 664,988 tons, showing a decrease this year of 6,476 tons, or 0.9 per cent. The reduction this year was the result of the limited supply of coke.

NICKEL-BRONZE ALLOYS.—In a note recently contributed to the "Chemical News," Mr. Sergius Kern of St. Petersburg gives particulars of certain nickel-bronze alloys which are being tried for high-pressure steam fittings in the Russian Navy. The alloys, he states, are but little subject to corrosion, and are, in some respects, preferable to steel castings. One of the alloys tried had the following composition: Copper, 10; nickel, 17.5; zinc, 12.5. In the cast state this alloy proved to have a tensile strength of about 26 tons per square inch, combined with an elongation amounting to 23 per cent. in 2 in. The fracture was fibrous, and the specimen would stand bending through an angle of 65° round a radius of 1⅝ in. Another alloy, which has also given good results, is made up in the following proportions: Copper, 70; nickel, 20; zinc, 10. The tensile strength in this instance was 36 tons per square inch, and the elongation 14 to 17 per cent. on a length of 2 in. The specimen could be bent over a radius of 1⅝ in. through an angle of 30° to 40°. Under a drop test, specimens 30 mm. square in section were bent through a right angle without fracture. The alloys were made in an ordinary copper-melting crucible, capable of holding 150 lbs. of metal. Half the copper and all the zinc were first melted, cast into ingots, and sheared into small pieces, and the preparation of the alloy completed in the following manner: Nickel was placed at the bottom of the crucible, and then a layer of the copper-zinc alloy, followed by a layer of copper, the alternation of strata being repeated till the full charge had been added to the crucible. A final layer of charcoal was then added. About 15 hours were needed to melt the charge, which was run into flat open moulds, and remelted twice before using for castings. About 0.75 per cent. of zinc was lost at each melt, and had to be made good before pouring. The alloys shrunk considerably on solidifying, and large risers were, therefore, required.

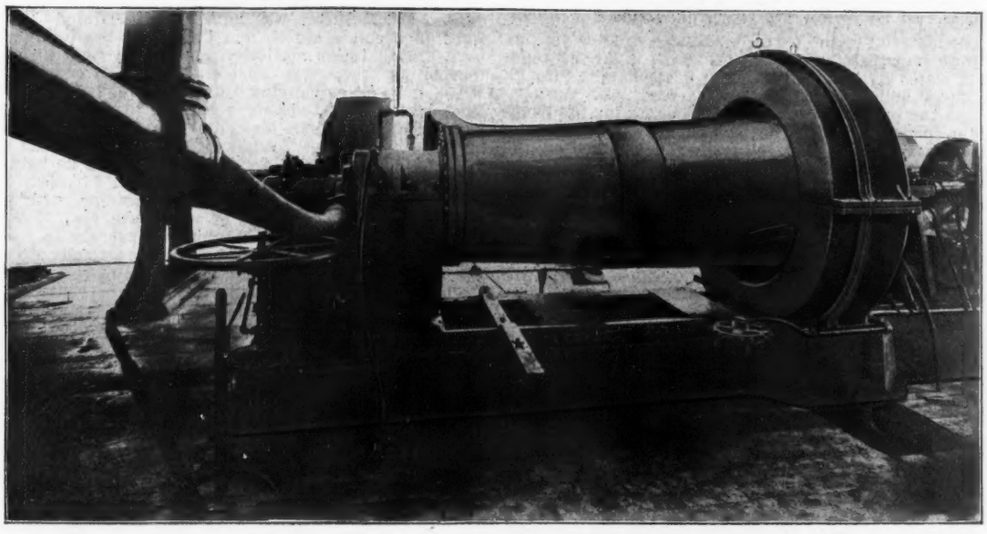
THE NEW PECK-MONTANA CONCENTRATOR.

Written for the Engineering and Mining Journal by Geo. W. Winter.

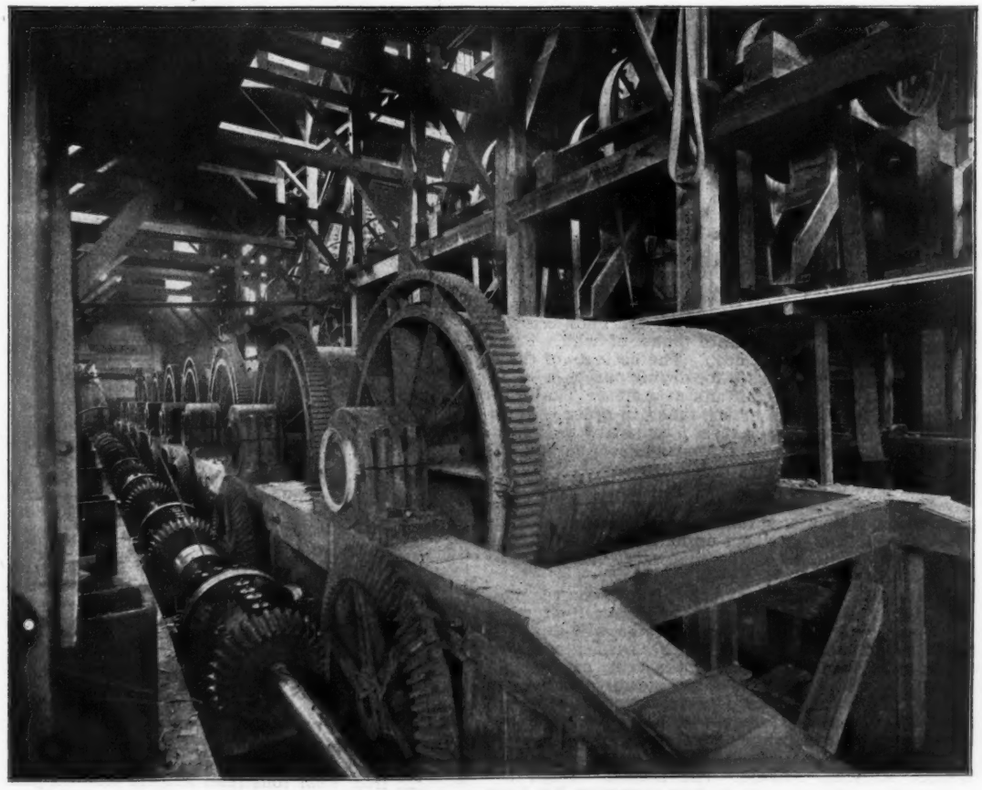
These works are the outcome of a series of experiments extending over a period of eight years, conducted at Corbin, Montana, with the Peck idea of centrifugal ore separation. The earlier machines, of which there were several, have all been discarded for the Peck centrifugal separators now in use at this mill. The idea originated with Mr. O. B. Peck and is essentially a slime machine. Material coarser than 80 mesh cannot be handled by it successfully, but with anything above 80 mesh in fineness the machines have demonstrated their ability of saving practically all the values.

To arrive at the present state of development, credit must be given to Mr. S. T. Hauser, who has stood behind the experiments financially, and in the face of a series of costly failures that would have discouraged most men. This mill was designed by and constructed under the supervision of Mr. Frank W. Rossberg, who had conducted the later tests at the Corbin works and who bears with Mr. Hauser the responsibility for the present state of efficiency. The Corbin Mill was built to treat the tailings from the old Alta Mill, and has no way of doing coarser crushing. The new mill is a custom mill and was designed for handling crude ore.

The works are located on comparatively level ground, near the Northern Pacific Railroad tracks, with a spur from that road running through the top story, all ore being delivered by the railroad. The power is furnished by electric induction motors from current generated at Missouri River Dam, 12 miles distant, the efficiency of power delivered being about 80 per cent. The coarse crushing is done by a "C" style Comet gyratory crusher, built by Fraser & Chalmers. The crusher, together with dynamo to run it, is mounted on trucks placed on a track over the receiving bin, alongside of and sufficiently below the delivered cars to make shoveling out of them into top of crusher easy. The receiving bins hold about 800 tons and practically extend the length of the mill. The ease with which the crusher can be moved greatly facilitates the unloading of ore, as several cars can be run in at one time and crusher placed at any car or any desired part of bin. The ore is taken in size of mine run and crushed to 1¼ in. size. From receiving bin it is fed through James feeders to belt elevators supplied with 6 by 4-in. iron buckets, and is delivered up to 8 sets of 10 by 30-in. rolls, especially designed for this mill, and built by Fraser & Chalmers. These are speeded at 50 revolutions and reduce the ore to No. 4 mesh.



PECK CONCENTRATOR AT PECK-MONTANA MILL.



BARREL PULVERIZERS, PECK-MONTANA CONCENTRATING MILL.

The ore is discharged into a hopper, when sufficient water is added to wash the pulp down to pulverizers, after first allowing the Rossberg pulp and ore sampler to take a sample each 30 seconds. The pulp is now fed to 8 barrel pulverizers through the hollow bearing or trunnion by means of flexible tubing. These pulverizers were also built by Fraser & Chalmers, from special drawings by Mr. Rossberg, and are lined with heavy corrugated chilled-iron linings. This type of lining was adopted as the result of various experiments with different types and forms. These barrels are 6 ft. in diameter and 7 ft. 8 in. long, and turn at 12 revolutions; they are filled with 3 tons of iron or steel balls, 2½ in. in diameter, a sufficient number being added daily to make up for loss by attrition. The material in the barrel is reduced to sizes varying from 20 mesh up to an impalpable pulp. The fineness is largely regulated by the supply of water given the mixture. It is discharged through the opposite trunnion or hollow bearing from the feed, with the outflowing water, without the use of screens, which accounts for the irregular size of the pulp so discharged. The barrels have a capacity of from 15 to 30 tons per 24 hours each, altogether depending on the hardness and specific gravity of the material to be pulverized. The discharged pulp now passes through hydraulic sizers of 3 separations. The first separation claims 10 per cent. of the entire pulp, which is somewhat coarser than 20 mesh, and is carried back to the pulverizers. The second separation of about 40 per cent. of the entire pulp, entirely free of slimes, varying from 20 mesh to 80 mesh, is carried to another hydraulic sizer of four separations. This second separation of 40 per cent. of the whole we will now leave and account for later. The third separation, or 50 per cent. of the entire product, consisting of slimes 80 mesh and upward in fineness, is elevated into agitating tanks from which it is fed to Peck centrifugal separating machines.

The agitating tanks are of steel and are hopper or cone shape. They are 14 ft. in diameter at top, 2 ft. at bottom, and 14 ft. deep. The agitators in the tanks serve to keep the material from settling before it is fed to the machines. The machines are cylindrical in form, with a small taper, being 40 in. in diameter at the larger end and 33 in. in diameter at the smaller end, and 8 ft. long. They are run at a speed of 600 to 800 revolutions while being loaded with the clean concentrates. The cylinders are of forged steel, hammered out from one piece of metal, and are made by the G. J. Bliss Company, Brooklyn, N. Y. The machines are driven by a 10-in. belt passing around the diameter, traveling on a raised surface 10½ in. wide, which answers for a pulley, and is part of the forged cylinder.

The pulp is fed in the small end and the clean concentrates are discharged from the larger end. There is a continuous discharge of waste material and water while the machine is loaded with clean concentrates, which it retains by its centrifugal force owing to the higher specific gravity.

The time required to load the machine with concentrates varies from 5 to 18 minutes, depending on the nature of the pulp and the percentage of gangue or silicious matter the pulp may contain. When the machine is loaded as announced by the indicator, the feed is shut off; the speed of the cylinder is decreased to about 200 revolutions, which releases the concentrates from the centrifugal influence, and they are discharged by adding an additional amount of clear water in from 2 to 3 minutes. The speed of the machine is now increased to its maximum and it is ready for a new charge.

Going back to the second hydraulic sizer, which has 4 separations, the hydraulic jets of water are so regulated as to divide this 40 per cent. of the entire pulp into 4 different sizes, each of these going to its own special round table. These round tables consist of 2 sets, each set being built 4 decks high. There is a set for each side of the mill. These are the only 4-deck tables in this country and were so built to economize space. Each table is 18 ft. in diameter, each table in a set being given a different slope to accommodate the 4 sizings, varying from 20 to 80 mesh. The tailings from the tables are deposited without the mill. The middlings are elevated back to the 4-compartment sizer. The concentrates, along with the concentrates from the Peck centrifugal machines, are discharged into concentrate tanks, of which there are 8, each 34 ft. long, 8 ft. wide and 6 ft. deep. The bottoms of these tanks are laid with 1½-in. steam piping, used for drying purposes.

The concentrates are discharged into one tank at a time. The overflow is allowed to circulate through the empty tanks in order that no values may escape, the aim being to keep at least 5 tanks always empty. The overflow then passes out to a reservoir, from which it is pumped back to be again used.

The concentrates are allowed to accumulate in each tank until it contains a car-load, say 20 tons, when the water is drawn off as low as possible, taking care not to disturb any values. Steam is turned into the 1½-in. pipes laid on the bottom, and kept on until the moisture has been reduced to 12 to 14 per cent., when the concentrates are sent to the smelter.

The method followed in eliminating the slimes from the coarser pulp and not allowing that part to pass over the round tables, and the further grading of the coarser pulp by 4 separations, enables the mill to get as close results from the round tables as from the Peck machines. On the sulphide ores from the Rimini District 98 per cent. of the gold values are saved. The old mill at Corbin has run steadily for 3 years on tailings which had gone through the Alta Mill, passing through jig and over round tables. The recovery by the Peck machines is above 75 per cent. of the values contained in the tailings.

A LOW EXPANSION NICKEL ALLOY.—The London "Engineer" says that a nickel steel alloy with exceedingly low expansion has been produced by M. Guillaume, of the Bureau International des Poids-Mesures. A steel rod, 1,000 mm. long, expands 1.035 mm. on heating to 100° C.; in the case of an alloy with nickel, this expansion increases until it reaches the maximum at 24 per cent. of nickel. From then on, with a greater percentage of nickel, the expansion decreases again, being only 0.0877 mm. in case of an alloy of 35.7 parts nickel and 64.3 parts steel, hence is one-twelfth of that of steel or one-eighth of that of iridium, which heretofore possessed the lowest expansion. If the percentage of nickel rises above 35.7 parts, the expansion becomes larger again.

YUKON TERRITORY.—LEWIS RIVER COPPER DISTRICT.

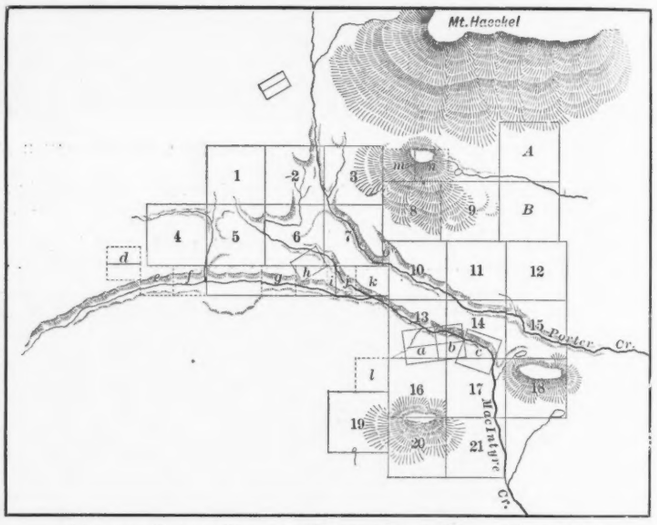
Special Report of W. M. Brewer, Traveling Correspondent.

On July 5th, 1898, Mr. John McIntyre discovered the outcroppings of bornite and copper carbonates about 3½ miles distant from White Horse Rapids, on the Lewis River. These rapids have already become universally known because of the danger which attends the shooting of them in small boats, and the number of men who have already been drowned in making such an attempt. A few days after the discovery, Mr. McIntyre was joined by Mr. Granger. As their discoveries were an absolute secret, and they were not followed into this district by a crowd, these gentlemen had ample time to locate claims and to thoroughly prospect a considerable area of country.

The map accompanying this article shows the lines of the concessions which have been since granted to various parties, as well as the boundaries of the smaller claims which were the first locations. Each of these concessions contains 160 acres, while the smaller claims are 1,500 by 1,500 ft. The country is described as being practically level, the elevation being only 500 ft. in about 4 miles. The geological formation is principally granite and limestone, with some felsite dykes. The outcroppings, portions of which are very high-grade bornite ore, are described by several mining engineers who have visited the district since its discovery as being of enormous extent, and indicating the occurrence of very extensive bodies of copper ore.

These outcroppings usually occur on the contact, either between the limestone and felsite or between the granite and the limestone. Considerable of the outcrop is described as hematite iron ore, impregnated with malachite and azurite crystals.

In places the outcroppings in this district are prominent bluffs of mineralized material. A large proportion of this is white iron, with



MINERAL CLAIMS WEST OF WHITE HORSE, YUKON TERRITORY.

no sign of copper visible to the eye, but which assays 4½ per cent. of copper. The malachite assays about 17 per cent. of copper, while the bornite carries as high as 64 per cent. of copper. The majority of the assays, which have been made from samples brought down by engineers and prospectors, yielded both gold and silver values.

Of course but very little development work or real prospecting has yet been done because of the lack of transportation for these smelting ores, but several parties expect to go in early in the spring and commence development work on the claims which have been already located.

The fact that the White Pass & Yukon Railroad is being rapidly built to White Horse Rapids, where its northern terminus has been located, and a town named Closeleigh started, will bring this district in as close touch with the outside world as many mining camps are in older sections. The railroad company has guaranteed to the miners a low freight rate through to the smelters in the State of Washington, and it is also expected that this company will build a branch road from Closeleigh to the mines during the coming season. The timber and water supply are fairly good; in fact, as the writer is reliably informed, ample for all purposes for some time to come. The mineral zone in which discoveries have been made is apparently continuous for a long distance westerly.

MINERAL IMPORTS AND EXPORTS OF SPAIN.—Imports of mineral fuel into Spain in January included 132,164 tons coal and 18,652 tons coke. Imports of iron and steel included 168 tons cast iron, 404 tons wrought iron, 6,021 tons steel and 132 tons tin plates. Exports of minerals were, in metric tons:

	1899.	1900.	Changes.
Iron ore	595,495	685,059	I. 89,564
Copper ore	63,730	80,935	I. 17,205
Zinc ore	3,583	6,731	I. 3,148
Lead ore	991	127	D. 864
Salt	16,616	13,116	D. 3,500

Exports of metals included 6,608 tons pig iron (2,195 tons, 1899); 2,031 tons copper (2,648 tons, 1899); 13,705 tons lead, against 12,768 tons in 1899.

THE TRANSVAAL MINING INDUSTRY FOR THE SECOND HALF OF 1899.—IV.

Special Correspondence of the Engineering and Mining Journal.

(Continued from page 348.)

Early in January the Government of the Transvaal decided to appoint a committee to represent the interests of French, German and other stockholders—outside of Great Britain—in the Witwatersrand mines which continued in operation. This committee consisted of three persons, Mr. Edward Boucher, a Frenchman who had been a long time resident in Johannesburg as consulting engineer, and a director of several companies; Mr. Adolph Wagner, a German who was interested in a number of mining companies, and a member of the Stock Exchange, although not himself a stockbroker; and Mr. William David Gordon, an American who had been for years manager of the firm of C. A. Williams & Company of Johannesburg, who represented the Ingersoll-Sergent Drill Company there, and had also been American Consul. On January 9th a decree was issued as follows:

"Information is hereby given that since the Government of the South African Republic has considered it desirable and necessary, in accordance with the gold law of 1898, and the decision of the Second Volksraad of September, 1899, to take possession of and to work some of the mines—namely, the Robinson, the Bonanza, the Ferreira Deep and the Rose Deep—and has further considered it necessary that there should be an efficient control of the working of these mines, a board of managers is hereby appointed, consisting of the following persons: Chairman, Barend Jacobus Kleijnhand, chief of the mining department; members, John Henry Munnik, acting State mining engineer; Isaac Van Alphen, postmaster general; Johannes Christoffel Minnaar, recorder; Edward Boucher, Adolph Wagner and William David Gordon. These gentlemen have received their commissions and authorizations, and, having taken the required oath, are already in office."

With regard to the taxation on the gold production, a circular was published early in January, giving explanation with regard to the tax law, which was published in the third of these articles (March 24th). This circular was signed by J. F. De Beer, chief inspector of offices, and addressed to the representatives, managers or superintendents of gold mines.

"In connection with law No. 22, of 1899, governing the taxation on the gross production of gold in the South African Republic, I have to remind you:

"1. That up to the 10th day of each month a statement has to be sent to this department of all the gold and the value thereof produced by any person, syndicate, concession, institution or company during the month immediately preceding, upon the form established by this office, and published in this circular.

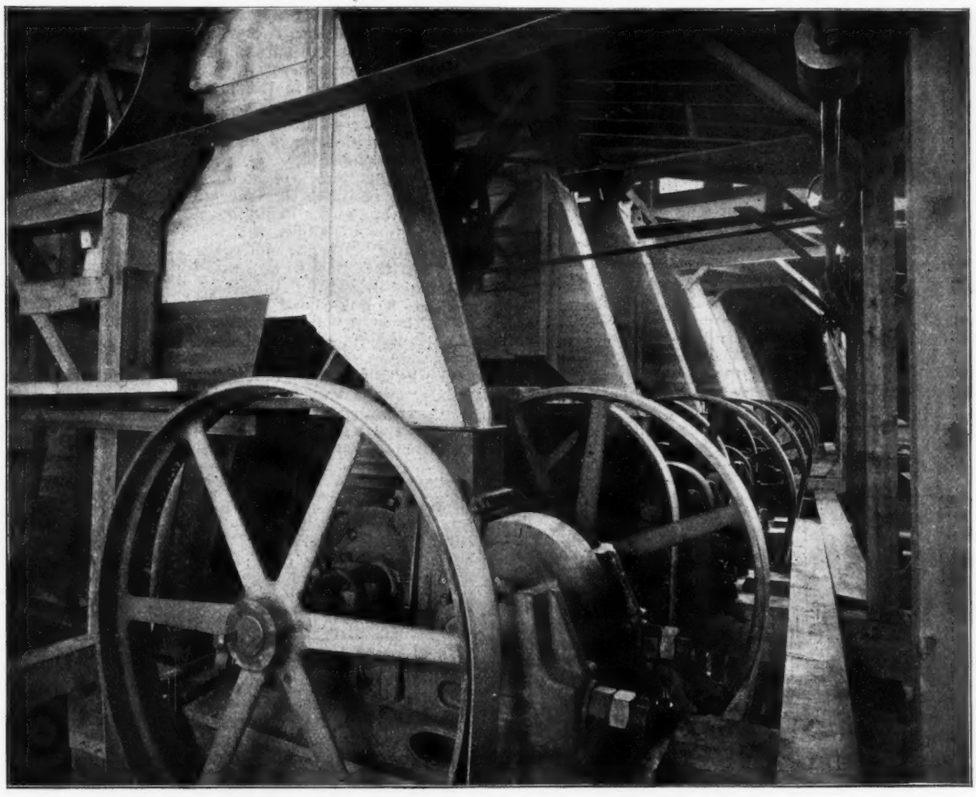
2. That all individuals, syndicates, concessions, institutions or companies which produce gold during the continuance of this law must give information thereof to this department within seven days after production begins; and in case that there has been no commencement of production of gold, then information must also be sent within seven days.

"3. That the statements of the gold-producing mines must be calculated back and furnished to this department from October 11th, 1899, up to date."

The statement appended requires separate statements of the gold produced by amalgamation in the mill, by cyaniding of tailings, and by treatment of concentrates or slimes. The statement must be sworn to before a court of record.

It is well known that the price of dynamite in the Transvaal and the monopoly held by the dynamite syndicate had been for years one of the great grievances charged by the mining community, and constantly brought forward by the Chamber of Mines of Johannesburg, although the prices have been reduced from time to time. The syndicate had been for a long time represented by Mr. L. G. Vorstman, and about the close of December a new agreement was entered into between the Government and Mr. Vorstman, who represented the company known formally as the "South African Factory of Explosives, Limited," at Pretoria.

According to this agreement the prices of explosives were fixed and at the same time the Government agreed to annul certain parts of the dynamite contract of May 24th, 1894, and the following article substituted: "The agent undertakes to pay the taxes as fixed by the decree of August 25th, 1899, and the sum of 17s. 6d. for each case of dynamite sold to the Government, payment to be made and certified statements to be submitted every three months. The Government releases the agent from any special taxation. The company undertakes to fulfil the further stipulations of the decree, and to carry them out with regard to the prices as fixed by this contract. The reduced prices are to take effect from the signature of the contract." The date of this was December 20th, 1899.



ROLLS AND ELEVATORS, PECK-MONTANA CONCENTRATING MILL.

The prices fixed were as follows in lots of not less than 50 cases, delivery to be taken at the company's factory at Modderfontein: Dynamite No. 1, 65s. per case; dynamite No. 1, 60s.; gelignite, 65s.; dynamite No. 1 A, 78s. 6d.; blasting gelatine, 87s. 6d.

It is understood that the Crown Deep will be added to the list of mines operated directly by the Government. In a previous article (March 10th), a list was given of 30 mines which had received permission to keep the pumps going in order to keep the mines clear of water. At a later date, it probable that some others may be added to the list. In addition also to the gold mining companies mentioned at the same time, which are continuing work with their own management, but under Government supervision, the Geldenhuis Estate and Gold Mining Company, made arrangements in January to start up its works, under the conditions imposed by the Government.

The following official report was published showing the work done, and the production of gold at the Robinson Mine during the month of December, 1899:

Tons ore milled, 18,041.	Bullion, oz.	Fine gold, oz.	Value.
Gold produced:			
From mill	13,164	11,511	£48,804
From cyaniding tailings	3,973	3,344	14,182
From chlorinating concentrates	3,903	895	3,798
Total from Robinson Mine	18,040	15,750	£66,784
From concentrates from other mines	2,249	2,235	9,478
Totals	20,289	17,985	£76,262

The total revenue of the Government on Robinson account, as shown

in the table was, therefore, £66,784, and the working costs were £18,287, leaving a profit of £48,497. This may be compared with the statement of the Robinson Company for the year 1897, that for 1898 not being available here. The ore milled for that year averaged 15,033 tons per month, or about 3,000 tons less than the total shown above. The working expenses were 27s. 5¼d. per ton, while for December the working expenses were 20s. 3¼d. per ton, showing that under Government management there was a reduction of 7s. 2d. per ton.

Another official report submitted has been that of the Bonanza Mine, which is now operated by the Government under charge of Mr. E. F. C. Osterloh, formerly one of the Government Mining Inspectors. The Bonanza, it may be noted, though a comparatively small mine in extent, the claim area being limited, is one of the richest on the Rand. The surface plant is nearly new, the machinery having been furnished by Fraser & Chalmers in 1896 and 1897. Mr. Osterloh's report says that he took possession of the works on October 14th, and in answer to a notice calling for men he received applications from a sufficient number to operate the mine, and started on October 16th.

In this mine there are worked the main reef leader averaging about 36 in. thick, and the south reef averaging about 18 in. Stoping on the main reef is carried on on the third level west, on the fourth level east and west of the main shaft, on the fifth level from a winze sunk from the fourth level, and on the sixth level from the same winze. On the south reef stoping is carried on east and west from the main shaft on the third level, the east stopes being now near the Robinson line. The mine plans had been removed so that the manager had no guide in conducting operations. Sufficient development work had been done ahead, however, to remove any apprehension that the mill would have to stop for want of ore. The greatest apprehension was caused by the bad condition of the pumps, which did not keep the mine clear of water. The mill was serviceable, and during the last half of October 40 stamps were run, crushing a total of 1,889 tons of ore; the average duty being 4.72 tons per stamp per day. The return from the plates was 1,283 oz. of fine gold. This was taken from the plates only, no complete clean-up having been made. From the cyanide works and a slime works no clean-up was made and no report could be furnished. The white working force is very good, selection having been made of the best men available. The number of black workmen was not sufficient and a full yield from the mines cannot be expected until the force is increased.

The report of Mr. J. F. Stallmann, who was appointed engineer of the mine, states that the machinery generally was not in good condition. In the boiler house, where there were 6 boilers, the stop valve and manhole covers from one had been removed and hidden. The main flue leading to the chimney was stuffed full of food of different kinds and bricked up at the end. Apparently none of the boilers had been cleaned for a considerable time, as both plates and tubes had a thick coating of sediment, many of the tubes leaked, and the back tube-plates were considerably corroded. It was with difficulty that steam could be kept up, and only one boiler could be cleaned out at a time, as it was necessary to keep the others running. The feed pumps were in such bad condition that a new pump had to be put in. In the mill engine room the condenser of the large engine was disconnected, and the air pump broken so that the engine had to be run non-condensing until repairs could be made. New brasses had to be put in the connecting rods, and the action of the governor was very poor. The air condenser needed a thorough overhauling. The crusher was in very poor condition and too small for the mill. The hoisting engine was in pretty fair condition. The machine shop was very poorly supplied with tools, and the engine in bad order so that it was impossible to make the necessary repairs. The mine pumps were in very bad condition, and the main discharge pipe from the mine so much corroded that part of it must be renewed very soon. The slime works required a new centrifugal pump, the old one being almost entirely worn out. Generally speaking, it was evident that the mine had been allowed to run for some time without any attention to maintenance or necessary repairs.

ELECTRIC SIGNALS AT WEST VULCAN IRON MINE, MICHIGAN.*

By A. W. Thompson.

No. 2 Shaft at West Vulcan is a strong down-cast shaft, and as it is wet in some places, a great amount of labor was required to cut the ice in winter and keep the pull lines in condition, so that the knockers could be rung. To avoid the difficulty, in November, 1897, two wires were run down the shaft, one for a main wire for an electric signal bell for the ore skip, and one for a grade signal bell, the two wires being grounded in the mine and at the surface.

It was considered best to put in a small single-stroke bell at each level, so that when a button was pushed, the bell in the level would ring to indicate that the line was in working order. An 8-in. vibrating bell was used in the engine house to make a loud signal, but it was soon discovered that a vibrating and single-stroke bell would not work successfully together, as the current through them would not break in unison. The vibrating bell was taken out and replaced by an 8-in. single-stroke bell, with an indicator to record the number of strokes rung.

After using the electric bells for three months in No. 2 Shaft and finding that they greatly increased the speed of hoisting, four strands of Clark's heavy, insulated wire were run in C Shaft, one for each of the three cages, and the fourth for the return wire, with 8-in. single-stroke bells in the shaft house and engine house. Generally the wires leading from the shaft house to the engine house were not connected with the wires in the shaft, but could be by turning a switch at the shaft house. As this shaft is wet and there was a line of 4-in. pipe not in use, the four strands of wire were tied together every 5 ft. and passed down the pipe.

After the bells were set working at C Shaft, two more strands of wire were run in No. 2 Shaft, one for the timber skip and the other to serve as a return wire for the three lines, as there was difficulty in getting a good ground in the mine. Thereafter the electric bells in No. 2 Shaft gave excellent results from March until November, when No. 2 Shaft went out of commission. At C Shaft the bells worked very well from the shaft house to the engine house, but from the mine to the surface it was impossible to keep the bells working for more than a few days at a time. The difficulty was that water would reach the connections or buttons, setting up either electrolysis, which would corrode the wire off, or a short circuit in the buttons. In the latter case the hammer of the bell remains down until the button is cut out or repaired.

When hoisting in No. 2 Shaft stopped, the output from C shaft greatly increased, and to improve the facilities for handling the ore through it, one of the cages was taken out and the compartment divided into two ore skips. To secure the greatest speed in handling the skips it was considered best to use an electric bell and ring direct from the mine to the engine house. Having had poor success with the bells in C Shaft up to this time, all the wires, bells and buttons were taken out and the shaft and stations re-wired, using the same wire and buttons, but leaving out the small bells in the stations to avoid making any more connections than were actually necessary.

The following is the system of signals which is in use at present at West Vulcan, as the result of an experience of over two years:

Six strands of wire are used in the shaft. Five act as main wires and one as a return wire. The six wires are tied together every 5 ft., forming a cable. This is passed down through an iron pipe. The pipe is made tight by a tapered wooden plug, which is split and grooved to allow spaces for six wires. The plug is driven into the pipe and resin melted and run into the groove around the wires, sealing the wires in the pipe. To make sure that the wires will not draw through, a clamp is put on them above the plug. At each level the wires are brought out through a tee in the pipe to connect with the buttons; then they are passed back through the tee again and dropped to the next level below. After passing the wires back into the pipe, a plug, similar to the one previously mentioned, is inserted in the tee and the wires sealed and clamped.

All connections are soldered, using the best blow-pipe solder and powdered resin. After the connection is soldered it is insulated with Okonite tape and a heavy coat of Stockholm tar applied. Then a tight-fitting piece of rubber tubing about 4 in. long is slipped over the joint and bound at each end with a small copper wire. The connections made in this way have stood for the last four months and are in first class condition. In the shaft house and the stations, for extra protection, a box-casing, painted inside and out, large enough for 12 wires, is used. As soon as the wires are put in, the cover, which fits snugly, is painted and driven into place, making the joints water-tight. This puts the wires out of harm's way and makes a neat appearance.

We have found that if the buttons are not protected, the rubber gaskets are soon worn out, the buttons become clogged with dirt, and, if not overhauled, a continuous current is started which will eventually destroy the battery. As a protection to the buttons we have devised a casing-block which prevents the water from reaching the buttons.

The system of wiring includes seven main wires, on which are 47 buttons, and one return wire. The main wires have each an 8-in. single-stroke bell, with an indicator attached, and are operated by four batteries. Two of the main wires run only from the shaft house to the cable-engine house. The return wire is connected to the negative pole of each battery and all the bells and buttons. The main wire for the grade bell has a button on each level. By following the main wire from the positive pole of the battery in the cable-engine house to the grade bell in the shaft house, thence to one of the buttons in the mine, thence by the return wire to the negative pole, it will be seen that the grade bell will ring if any button on the red line is pushed. The main wire for the timber-cage bell connects with the bell in the hoisting-engine house. On the men's cage wire there are two buttons at each station, one of which can be rung from the cage.

For the east skip main wire and the west skip main wire, one battery is sufficient, as the skips are run in balance, and only one bell is rung at a time. One battery answers for the grade bell and both cable-engine bells, as they are never rung together.

When the system was first put in there were only two batteries, one in each engine house, on the return wire. The result of putting the battery on the return wire is that, if a button is pushed on two or more lines at a time, the electromotive force on each will be much less than when one line is in use, and the bells will not ring properly. If the batteries are distributed, the chance of all the lines giving out at once is practically eliminated.

The indicator was designed by Mr. E. Roberts, master mechanic of the Penn Iron Mining Company. The hand of the indicator is revolved by a ratchet connected by a rod to the armature of the bell. The case and hand are the same as used for steam gauges, and the face is a clock dial. The hand stops when it reaches 11 and may be brought back to zero by pulling a cord. It is adjusted to register if the armature makes a quarter of its stroke. The object of the indicator is to enable the men to see, as well as hear, the signal.

In conclusion I would say that the secret of success with electric bells is perfect insulation.

*Paper read before the Lake Superior Mining Institute, February, 1900.

RECOVERING A LOST BIT.—The hardened end of a bit, or chisel, broke off in a bore hole 300 m. deep, put down near Ostroppa, in Upper Silesia, by Zoellner & Co.; and this obstruction effectually prevented further boring of the hole, because all the diamond crowns wore away, says the London "Colliery Guardian." After the most various attempts had failed to remove the piece of steel, the following plan was hit upon by Engineer Degenhardt of Gleiwitz. A soft steel bar, 1.5 m. long and of 70 mm. diameter, was covered by a single winding of india-rubber tape, and magnetized by the current of a small dynamo driven by the portable machine employed for the work of boring; and the current was kept constant at about 30 amperes by means of a simple resistance coil. The steel bar was let down into the hole unmagnetized; and, when it reached the bottom, the current was switched through the conductor enclosed in the rope for letting down and drawing up. On the first day that this method was employed the piece of steel was drawn up to the surface, so that boring could be resumed.

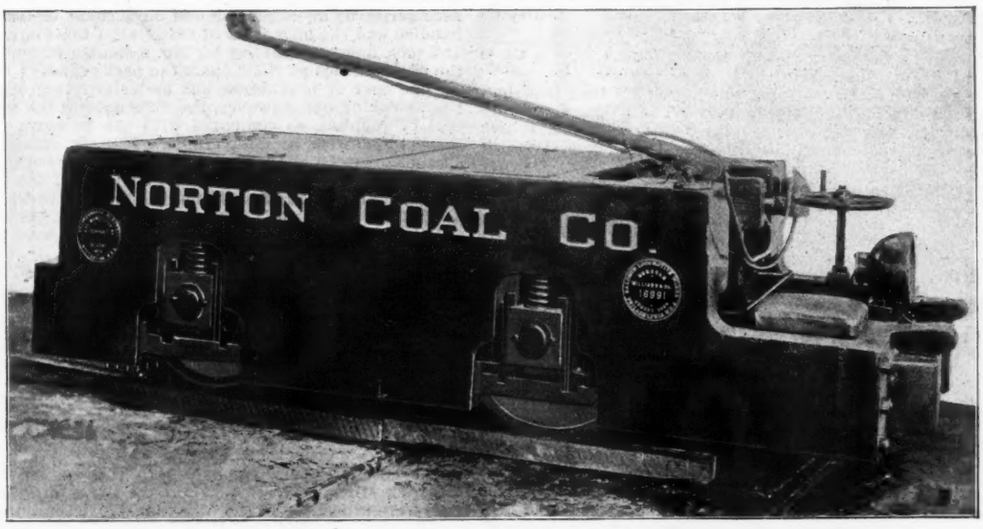
ELECTRIC HAULAGE AT THE NORTON COAL MINES, VIRGINIA.

The Norton Coal Company at Norton, Va., has recently put in a complete plant for supplying electric traction and electric power. The coal seam is practically level, the dips not exceeding 3 per cent., and it runs from 4 ft. to 7 ft. in thickness. The two mines now in operation extend under the town, the drift mouths being about 1,500 ft. apart. The output is about 550 tons a day, the coal being used for domestic purposes, and for supplying locomotives of the Louisville & Nashville and Norfolk & Western Railways, Norton being the terminal point of branches of both roads.

The electric power station is near the entrance to one of the mines and contains a 100 K.W. Westinghouse 250 volt multipolar generator, belted to a Harrisburg 150 H. P. steam engine. The switchboard is of the standard type, with a special feeder panel for the coal cutting machinery in Mine No. 2. The trolley wire is 00 figure 8, extending into No. 1 Mine for 4,000 ft. to the face of the workings, and from the drift mouth 800 ft. to the tipple. A feeder line extends 2,000 ft. into the mines.

These wires are carried by overhead construction varying from 5 to 7 ft. in height, according to the thickness of the seam, which has been removed. The trolley line in the mine is divided into four sections, each of which can be connected or disconnected at will. In case of a fall of any part of the trolley wire that section can be temporarily cut out of the circuits for repairs by removing the connections between the sections. The other sections may still be operated either direct from the power house, or by receiving current from the feeder line.

The track consists of a single line 3 ft. gauge, of 20 to 30 lb. rails. The cars carry 2 tons of coal each. The electric locomotive is one of the well-known Baldwin-Westinghouse type, weighing 10 tons, and hauls 18 loaded cars each trip; a view of one of the locomotives is given herewith. These locomotives have been largely adopted for mining work in all parts of the United States, Japan and in other countries. One mining concern in Pennsylvania employs upward of 20 of them. Their form and outline are extremely compact, especially suited to low and narrow mine entrances and headings. The height runs from 26 to 38 in. with a length of 12 ft., and a width of 5 ft. The moving parts are covered and not exposed to dirt and external injury. The frame is of heavy cast iron, the sides and ends being firmly bolted together. The operator sits at one end with all levers and switches within reach. Each locomotive is equipped with two Westinghouse railway motors, especially designed for mining work.



BALDWIN-WESTINGHOUSE ELECTRIC MINE LOCOMOTIVE.

Electric haulage was introduced into this mine for two reasons, for economy and to increase the output. Formerly a steam locomotive weighing 11 tons was used to haul the cars from a point 1,700 ft. within the mine, mules collecting loaded cars and bringing them 2,300 ft. to the locomotive. The cars were then hauled to the drift mouth, but from there to the tipple is an up-grade of 11 per cent. upon a 76° curve, which required each train of cars to be broken up into two sections, and a separate haul made by the steam locomotive for each part. The electric locomotive hauls the entire train of 18 cars all the way from the face of the workings to the tipple without any break. By this means the output of the mine has been about doubled. The steam locomotive so pounded upon the rails that the track was always needing repairs.

The cost of hauling has been reduced by the introduction of electric haulage from about 8c. per ton to about 1c. a ton, to which must be added interest upon the investment in electric apparatus. The saving shows interest at the rate of 30 per cent. upon the sum invested.

Electric current is also used in No. 2 Mine to operate coal cutters. The drift mouth is 1,500 ft. distant from the power house, the conductors are bare copper 00 wire, which are insulated from the mouth of the mine to the face of the workings for the protection of the mules. A return wire is used, and three sections of the mine are wired for operating the cutters in different headings.

UTILIZING BLAST-FURNACE GASES.—In a recent communication to the "Revue des Sciences," M. Emile Demenge says that there are now 74 engines, having a total force of 37,720 H. P., operated by blast-furnace gas at iron works in Europe. Most of these engines are in Germany and Belgium.

ABSTRACTS OF OFFICIAL REPORTS.

Atlantic Mining Company, Michigan.

The report of this company for the year ending December 31st, 1899, states that the production of mineral was 6,147,555 lbs., which yielded about 76 per cent. or 4,675,882 lbs. of refined copper, for which there has been realized about 17c. per pound. The following is a summary of the year's business:

Copper, 4,675,882 lbs. sold for		$802,304
Received for stumpage		500
Total		$802,804
Working expenses at mine	$508,148	
Smelting, freight and all other expenses	63,009	
Balance of interest account	1,870	
Net running expenses		$573,027
Surplus over running expenses		$229,777
Construction and improvements		78,527
Net gain in 1899		$151,250
Surplus from 1898		105,099
Net surplus December 31st, 1899		$256,349

The directors' report says: "Out of this a dividend of $2 per share ($80,000) was paid February 15th, 1900, leaving a surplus of $176,349, which amount is needed for the proper handling of the business of the company. The low yield of the rock, which was noted in our last report, continued during the first seven months of the year, reaching the lowest point in the history of the mine, or an average of 11 lbs. of copper per ton of rock stamped. A change for the better then began, and the yield improved gradually, giving an average for the last five months of the year of 13 lbs. per ton, and for the entire year an average yield of 12 lbs. per ton. The improvement in yield is maintained, and the prospect for its further continuance seems good. A general increase in costs will be noted, and is the result of the increase in wages and in the prices of fuel and supplies that has accompanied the activity in business affairs, and the demand for labor incident to the opening of so many new mines in the region. The construction account has also been large, as in addition to the installation of a powerful hoist at B shaft, we have been obliged to build several new dwellings and improve others, in order to meet the attractions offered to our employees by the modern dwellings erected at the new mines."

The total assets December 31st, 1899, were: Cash, $17,653; copper bills and copper on hand, sold, $159,126; coal, wood and supplies at mine, $77,234; merchandise in store at mine, $62,227; amounts receivable, $7,596; total, $323,836. The liabilities were: Indebtedness at mine, $47,606; accounts payable, $9,881; loans, $10,000; total, $67,487; leaving balance of assets, $256,349 as above.

The general summary of results shows: Ground broken in openings and stopes, 22,101 fathoms; rock stamped, 380,781 tons; product of mineral, 6,147,555 lbs.; product of refined copper, 4,675,882 lbs.; yield of refined copper per cubic fathom of ground broken, 211.05 lbs.; yield of rock treated, 12.28 lbs. per ton, or 0.614 per cent.; gross value of product, per ton of rock treated, $2.107; cost per ton of mining, selecting and breaking, and all surface expenses, including taxes, $1.0360; cost per ton of transportation to mill, $0.0650; cost per ton of stamping and separating, $0.2335; cost per ton of working expenses at mine, $1.3345; cost per ton of freight, smelting and marketing product, including New York office expenses, $0.1704; cost per ton of running expenses, $1.5049; total expenditure (including construction) per ton of rock treated, $1.7111.

The report shows the work done during the year as follows: Sinking shafts, 352 ft., average cost, $22.91 per foot; sinking forks, 50 ft., average $14.19; drifting, 5,732 ft., average $5.03; stoping, 19,653 fathoms, average, $4.15 per fathom.

Lehigh Coal and Navigation Company, Pennsylvania.

This company owns a large estate in the anthracite region of Pennsylvania; it owns the Lehigh Canal and the Delaware Division Canal. It also owns the Lehigh & Susquehanna Railroad, which it leases to the

Central Railroad Company of New Jersey. The report is for the year ending December 31st, 1899.

The receipts for the year were as follows: Lehigh coal lands, $139,060; railroads operated, $74,928; canals, $7,403; rental Lehigh & Susquehanna Railroad, $1,803,296; miscellaneous, $179,436; total, $2,204,123. The payments were: General and legal expenses, $73,303; rental of leased properties, $180,539; taxes, $192,533; interest account, $854,236; sinking fund of 5c. a ton on coal mined, $83,802; total, $1,383,413, leaving a profit of $820,710 for the year. From this dividends of $2 per share or 4 per cent., were paid, amounting to $573,866, and leaving a surplus of $246,844.

The coal tonnage of the Lehigh & Susquehanna Railroad and Lehigh Canal compared with that of 1898 was as follows, in long tons:

Received from:	1898.	1899.
Wyoming Region	2,432,190	3,421,972
Upper Lehigh Region, Nescopec branch	238,175	259,214
Beaver Meadow Region	647,440	601,653
Mauch Chunk Region	1,353,266	1,608,652
Lehigh Valley Railroad	7,603	3,567
Schuylkill Region	197,383	232,247
Totals	4,876,057	6,127,305
Delivered:		
East of Mauch Chunk by rail	4,085,517	5,094,817
East of Mauch Chunk by canal	266,286	280,427
Consumed on line above Mauch Chunk	164,551	180,003
Connecting lines above Mauch Chunk	359,703	572,058
Totals	4,876,057	6,127,305

The increase last year was 1,251,248 tons, or 25.6 per cent. The tonnage reported from the company's properties is follows, in long tons:

	1898. Tons.	1898. Per ct.	1899. Tons.	1899. Per ct	Changes.	Changes. Tons.
Shipments and sales	1,333,460	92.1	1,676,034	92.7	I.	342,574
Used in operating	117,504	7.9	131,699	7.3	I.	14,195
Totals	1,450,964	100.0	1,807,733	100.0	I.	356,769
Cost of mining, per ton	$1.307	.....	$1.282	.....	D.	$0.025

The production per day was 7,782 tons, which was 223 tons less than in 1898, allowing for one idle colliery in 1899. The average working time of all the collieries, however, was 190 days, an increase of 41 days over 1898. The average cost of coal in 1899 was the lowest at which coal was ever produced by the company.

The report says: "Owing to the low prices prevailing during the first eight months of the year, the profits on the coal produced did not show the result to be expected in view of the lower cost. In addition, the constantly increasing percentage of the small sizes, which are sold at very low prices, very materially reduced the average receipts per ton at the mines. Of the total amount of coal mined by the company during the past year, 50.42 per cent. was made up of the junior sizes, as follows: Pea, 15.16; buckwheat, 17.33; buckwheat No. 2, 17.93 per cent. In 1889 these sizes represented a total percentage of 32.34, so that during a period of 10 years they have increased 18.08 per cent. This increase has been the result largely of the extreme care taken in saving this fine fuel during the preparation of the coal, in order to realize its market value, and to secure its transportation on our lines of railroad. Eight collieries were in operation during the year, one being idle. This colliery will probably be put in operation again at an early day. Your mines are in good condition, and if the market requirements will permit, shipments can be very largely increased.

"In making the sinking fund charge the board has considered it proper to change the method somewhat from that heretofore practiced. Up to this time the sum of 10c. per ton has been taken on the produced down to and including the size of pea coal. The method now in force is to make a charge of 5c. per ton on the entire output, including all sizes. While this change reduces the aggregate amount slightly, as on the present proportion of sizes, it is considered to be more than ample for the purpose designed, to provide for the extinguishment of the capital account as the exhaustion of the property proceeds.

"The business of the canals shows a profit of $7,403, which is an increase of $1,313 over 1898. The tonnage for the year amounts to 367,946 tons, an increase of 23,483 tons over 1898. The canal was opened for navigation April 5th, and closed December 2d. The ordinary repairs were made as usual, and in addition a portion of dam No. 8, known as Chain Dam, was rebuilt at a cost of $8,592, all of which was charged to operating expenses. This completes the entire rebuilding of this dam. During the past year a number of contracts have been made for water power along the Lehigh and Delaware Division Canals, increasing the revenues largely, and with other contracts in contemplation the earning capacity of this part of the company's property should be considerably augmented."

Tamarack Mining Company, Michigan.

The report of this company for the year ending December 31st, 1899, gives the following statement of income account for the year:

Sales of copper, interest receipts and other income	$2,952,099
Total costs	2,211,588
Net income for year	$740,511
Dividends Nos. 32 and 33	600,000
Surplus for the year	$140,511
Balance of assets December 31st, 1898	893,717
Balance of assets December 31st, 1899	$1,034,228

The directors' report says: "During the year the sum spent for construction and charged directly to operation expenses was $400,652. Our expenses for permanent construction charged directly to the operating account were almost exactly double what they were in 1898; but notwithstanding this large increase we were able to increase the dividends paid from $8 to $10 per share. The cost of production was higher than last year, owing to an advance in wages and all classes of material. The percenting of fine copper from the rock stamped was almost exactly the same, being 0.005 per cent. larger in 1899 than in 1898. Work has progressed at No. 5 Shaft as rapidly as was expected, and by the end of the year 1900 we should reach the lode. We anticipate that during 1901 the rock from this shaft will materially increase the company's production of fine copper."

The statement of assets shows: Cash and accounts receivable at Boston and copper sold but not paid for, $691,744; cash and accounts receivable at mine, $61,985; supplies at mine, $200,074; wood and timber lands, $288,634; Hancock & Calumet bonds, $99,000; Hancock & Calumet stock, $25,000; Lake Superior Smelting Company stock, $132,000; total assets, $1,498,437. The liabilities were: Accounts payable at mine, $175,143; accounts payable at Boston, $289,066; total liabilities, $464,209. The balance of assets December 31st, 1899, was $1,034,228, as above. Of the cash $106,989 was on deposit in the Globe National Bank when it failed. Fifty per cent. of this amount has been advanced to the company by the National Shawmut Bank, where parts of its funds are now kept.

The superintendent's report shows: Rock mined for the year, 775,532 tons; rock stamped, 631,090 tons; mineral obtained, 31,713,752 lbs.; cost of stamping per ton of rock, 22c. Opening work for the year is as follows: No. 2 shaft sunk, 147.5 ft.; No. 5, 918 ft.; total shaft sinking, 1,065.5 ft. The depth of the several shafts, December 31st, 1899, was: No. 1, 3,240 ft.; No. 2, 4,013.5 ft.; No. 3, 4,596 ft.; No. 4, 4,450 ft.; No. 5, 3,918 ft. Other work included 346 ft. sinking and raising for inclined shaft, and 11,794.9 ft. drifting.

The report of Superintendent W. E. Parnell says: "So far as can be seen, the construction account for the coming year will be largely confined to No. 5 shaft. We are nearing the goal at this shaft and must make preparation to utilize it. At the date of the report the shaft 4,013 ft. in depth. The first opening station will be at the 4,280 ft. point, and the lode should be struck at the 4,615 ft. point; hence it is within 267 ft. of the first level and 602 ft. of the lode. This should bring it to the lode before the year 1900 is out. To meet these conditions, a combined shaft and rock house constructed of steel has been contracted for and will be erected the coming summer. The structure with its equipment will necessarily be an expensive one on account of the great tonnage to be handled and the high price of material at this time. In addition to shaft and rock house equipment for No. 5 shaft a large compressor similar to the one installed at No. 3 shaft the past year will be needed.

"The cost of production has materially increased over the previous year. Taking out, however, the difference in the wages account and the cost of supplies, as compared with the previous year, the comparison would in nowise be unfavorable. The percentage of mineral in rock stamped shows a slight increase over the previous year, notwithstanding the fact that 51,090 tons, or 8.09 per cent., of the rock stamped for the year came from the Osceola amygdaloid, and was considerably lower in grade than the average obtained from the conglomerate.

The policy of keeping the openings well ahead of ground exhausted has not been neglected. An encouraging feature for the future is that the ground opened the past year shows a strong lode from 15 to 24 ft. in width and fully equal in quality to anything opened for several years past. At the stamp mill end an equal efficiency has been obtained with any previous year, and the betterments made a year ago have shown excellent results in reducing the loss in tailings. The cost of stamping shows a slight increase, which, as in the cost of mining, is more than offset by the increased price of labor."

THE RED ASH MINE EXPLOSION.

The coroner's jury empaneled in the case of the explosion at the Red Ash Mine, in West Virginia, on March 6th, in which a number of men were killed, found the following verdict on March 14th:

"We, the jury, find that B. B. Long and others came to their death by reason of an explosion of gas in the Red Ash Mine in the County of Fayette, and State of West Virginia, on the 6th day of March, 1900, caused by the lack of proper ventilation on this date."

At the inquest 12 witnesses were examined, and the testimony tended to show the condition of the mine from the beginning of its operation, about 1892, up to the morning of the explosion. It was conclusively proven that gas had been found in it at various times and in various quantities. It was also proven, however, that the air fan was not constantly kept in operation; that it was in operation all of the previous day, Monday, and that it had been started up before the men entered the mines. The evidence tended to show, also, that the men entered the mine before the fan had been in operation long enough to clear the mine of gases. The fact that the fan might have been operated at the time by power from the Rush Run Mine would not, it was brought out, have affected the operation of the fan.

In this connection Mr. J. W. Paul, chief mine inspector of the State, has made the following statement: "The Red Ash Coal Company had taken extra precaution to see that the mine was examined thoroughly for explosive gas, and to this end had issued a letter of instruction to their fire boss, defining his duties and calling his special attention to the importance of familiarizing himself with the State mine laws, and directing that he comply with them in every particular.

"A section of our mine laws say that the men shall not enter any mine or part of a mine known to generate explosive gas until reported by the fire boss to be safe. Another section says that no person in a mine shall open a ventilating door in a mine and not close it, under penalty of fine and imprisonment. The law also says that at least 100 cu. ft. of air per minute shall enter the mine for each person working therein, and as much more as is necessary to dilate and render harmless the noxious gases in the mine.

"The evidence at the inquest plainly showed that the men entered the mine before the fire boss had examined and reported on the condition of the mine. The testimony also showed that there was some probability of some workman leaving the mine on the night previous to the explosion, having left one or more of the ventilating doors standing open.

"These are the facts in the case as laid down by the law and as sworn to by witnesses at the inquest, so you may judge for yourself as to the responsibility for the greatest mining horror this State has ever experienced.

"While at the Red Ash Mine during the past week I have kept a record of the barometer readings and have observed the condition of the air and gas in connection therewith. Had there been solid brattices of masonry or brick throughout the Red Ash Mine the accident would

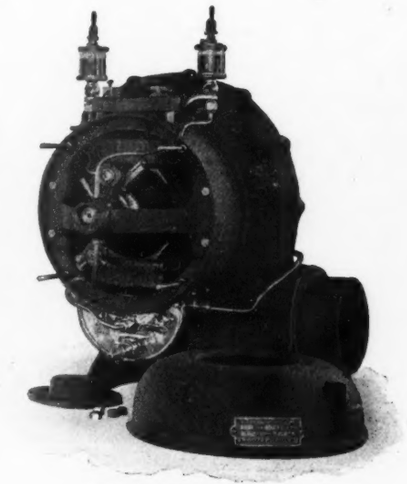
not have been so destructive and might not have occurred at all. I desire to call attention here to the fact that at the last Legislature I proposed the passage of a bill which required that all mines generating explosive gas should have solid brattices constructed of masonry or brick with mortar. This passed one branch of the Legislature unanimously, but was indefinitely postponed in the other. If the Legislature will not heed the suggestions offered by a branch of the State Government, created for the purpose of protecting life, then such branch had better be discontinued."

AN ELECTRIC FAN WITH DIRECT-CONNECTED MOTOR.

In the accompanying illustration is presented a new type of electric fan, consisting of a Sturtevant monogram blower and a motor, constructed by the B. F. Sturtevant Company of Boston, Mass., for direct connection to this fan. The field ring of the motor, which is of wrought iron, is attached to the side of the fan, and forms, therefore, a part of the enclosing frame of the motor. Within this frame is placed a cradle or double yoke, carrying two ring-oiling bearings, which are self-adjusting, and necessarily are kept in constant alignment. This cradle is clearly shown in the cut, and is held in place by four bolts, as indicated in the side view of the fan.

The armature shaft is of large diameter, carrying the fan wheel upon its extended side, and projecting through the casing of the fan itself. The armature is of the drum type, and the commutator constructed of dropped-forged segments. Carbon brushes are used, with self-feeding and adjusting holders of the socket type.

A cast-iron hood, or casing, with removable center, is employed to enclose the entire motor, which is thus kept free from dust. A fan of this type, being small in size, and therefore readily portable, is serviceable for all purposes where a movement of air is desired, while the enclosed feature of the motor makes it possible to operate it in a dusty atmosphere. Sight-feed oil cups supply oil to the bearings, and the overflow therefrom passes to a tank suspended beneath the frame, whence it may be removed at intervals.

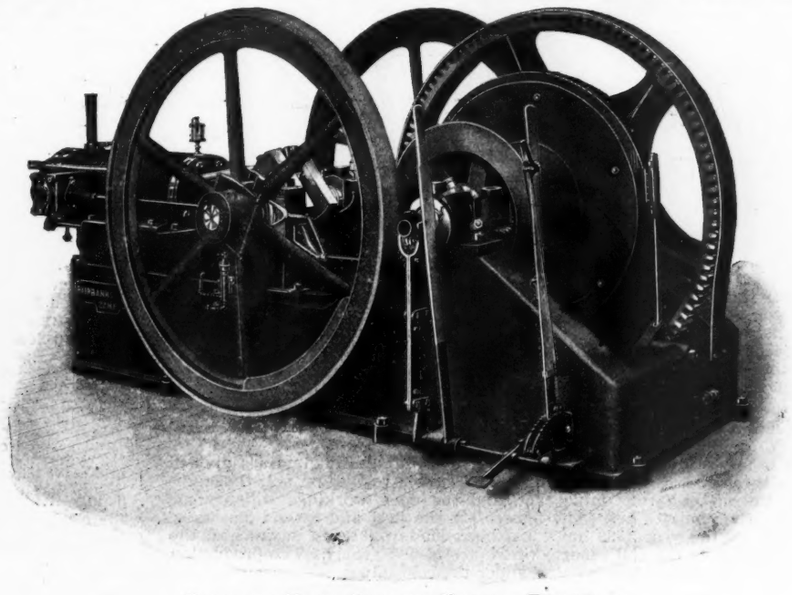


STURTEVANT ELECTRIC FAN.

A NEW GASOLINE HOIST.

The accompanying cut shows the general design and arrangement of a combined gasoline engine and geared hoist, manufactured by Fairbanks, Morse & Company, Chicago. A very large number of machines of this type were installed last year. The sizes range from 6 H.P. to 44 H.P. inclusive. The special advantage in using a gasoline hoist is that it entirely dispenses with the difficulty often experienced at mines in delivering solid fuel for a steam boiler. There is no water required, as there would be in case of steam, and in cases where the water is bad and impregnated with alkali and kindred chemical impurities that necessitate constant repair and expense in connection with the tube and boiler shell, that expense is all dispensed with. No special attendant is required, nor is a licensed engineer necessary, as any one who could operate an ordinary hoist is capable of handling the gasoline machine.

The saving in cost, as compared with steam, is very great, but it is difficult to give an exact comparison, as the comparative cost of fuels differ in different sections. A statement made in a recent letter received from a user of one of these machines covers the economy as compared with steam, as follows: "The cost of operating the gasoline hoist is less than the water used for a 6 by 8 in. double steam hoist which did the same work that the gasoline hoist is now performing." Others have hoists of an average of 25 H.P. and these have been operated 10 hours on 2½ gal. of low grade gasoline. When a shaft is being sunk at the end of a tunnel, these hoists are found very convenient, as the hoist can be set in the tunnel and operate direct into the shaft, while in the case of steam or electricity, it would be necessary to locate the steam boiler, or the dynamo, outside of the tunnel and convey the steam or electricity back into the tunnel to the point where it was to be used for hoisting, thus causing a large loss. These machines are always ready to start at a moment's notice, and give out full power at once. There is no danger from this class of machine, as the firing of the charge is effected by an electric spark produced inside of the cylinder. These engines have a patent self-starting device which enables one man to start any sized hoist with perfect ease. The general construction of this hoist is simple and strong.



FAIRBANKS-MORSE GASOLINE HOISTING ENGINE.

RECENT DECISIONS AFFECTING THE MINING INDUSTRIES.

Specially Reported for the Engineering and Mining Journal.

DURATION OF OIL LEASE AFTER EXPIRATION OF TERM—Under a lease for operating for oil for the term of 10 years, "and as long thereafter as oil . . . is found in paying quantities," in consideration of one-eighth of the oil, on the lessee failing, after the 10 years, to produce oil in paying quantities, the tenancy becomes one at will, not from year to year, and may be ended at any time by either party, without right to the lessee if oil is afterward discovered in paying quantities.—Cassell vs. Crothers (44 Atlantic Reporter, 446); Supreme Court of Pennsylvania.

RIGHT TO REMOVE IMPROVEMENTS.—Where a lease of a coal mine and improvements, exclusive of appliances for moving coal, recites that all repairs are to be made by the lessees, and any improvements made by them are to remain at its expiration, they cannot be restrained from removing a hauling system, introduced instead of other appliances for removing coal, as such agreement relates to the things leased, which were to be kept in repair, and to which improvements were to be added.—Beech Creek Coal and Coke Company vs. Mitchell (44 Atlantic Reporter, 245); Supreme Court of Pennsylvania.

DUTY ON BRECCIA.—A species of limestone or marble, crystallized, micaceous in appearance, and composed of broken fragmentary material of a violet or bluish-gray color, the cemented fragments of limestone being of an angular character, sometimes called "breche violette," is held to be breccia, and free of duty as such under paragraph 508, tariff act of 1897, and not subject to classification either as marble under paragraph 114, or as a crude mineral substance under paragraph 614.—In the protest of C. D. Jackson & Co., against decision of the Collector of Customs at New York; United States Board of General Appraisers.

RIGHT TO BONUS ON ASSIGNMENT OF LEASE.—A lessee who assigns a lease of oil lands for a cash consideration, and an additional sum to be paid if oil is found on the premises, cannot recover of a second assignee such additional sum, after oil is found by him; for it is merely a bonus to be paid by the first assignee, and not a covenant to run with the land. The title of a prior lessee of oil land, who fails to go into possession or to record his lease, will be defeated by a purchaser for value, without notice of a subsequent lease, though he drilled a well in the vicinity of the leased land, on another farm, in fulfillment of a covenant with his lessor, since such act is not sufficient to put others on notice of his possession of the leasehold premises.—Aye vs. Philadelphia Company (44 Atlantic Reporter, 556); Supreme Court of Pennsylvania.

DEFECTIVE INDICTMENT OF MINE BOSS IN INDIANA.—Under the law of Indiana providing, among other things, that coal mined under contract for payment by the ton or other quantity, shall be weighed before being screened, and the full weight credited to the miner, and which makes a violation by any owner, operator, agent, lessee, superintendent or mine boss a misdemeanor, an indictment that charges one as a "mining boss" without describing his duties as such, and which fails to otherwise charge that he exercised the powers of

those persons named in the law, should be quashed. Where such indictment states what such party did in violation of such law, without stating some intended or executed purpose affecting the rights of the miners, states no offense.—State vs. Pasco (54 Northeastern Reporter, 802); Supreme Court of Indiana.

METAL PRODUCTION OF COLORADO.

We give below the figures of the Denver Mint for the production of the precious metals, copper and lead in Colorado in 1899. We have substituted in the table the commercial value of silver for the coinage value given by the Mint. The values of the gold, silver, lead and copper are given as follows:

	Values.			
Counties:	**Gold.**	**Silver.**	**Lead.**	**Copper.**
Boulder	$542,631	$45,399	$1,250	$13,720
Clear Creek	541,663	768,409	197,131	50,999
Chaffee	214,617	87,574	53,356	130,324
Conejos	5,911	13,661	.....	.....
Dolores	46,259	138,745	17,857	4,583
Eagle	45,677	26,385	53,027	1,021
Fremont	8,141	1,589	50	1,156
Gilpin	1,976,887	202,582	58,579	180,593
Gunnison	69,451	43,377	62,465	8,039
Hinsdale	37,991	64,792	471,924	8,647
Lake	2,183,322	4,357,892	2,174,876	1,228,463
La Plata	44,896	14,591	73,624	3,202
Mesa	21	38,108	.....	812
Montroso	330	26,631	.....	12,352
Montezuma	15,275	53	.....	.....
Mineral	90,825	2,259,630	253,415	3,526
Ouray	1,674,857	1,390,874	337,104	53,829
Park	151,594	42,875	24,144	1,375
Pitkin	51,770	2,471,612	1,136,464	3,369
Rio Grande	19,044	1,555	73	57
Routt	11,437	645	151	.....
Saguache	3,659	8,445	19,690	6,147
San Juan	990,352	710,427	714,809	208,412
San Miguel	1,365,966	721,015	175,037	27,980
Summit	258,092	157,430	179,997	11,407
Teller	15,658,254	49,018	.....	.....
Other counties	5,727	4,483	37,852	644
County unknown	250,828	107,622	8,381	14,861
Totals	$26,065,478	$13,755,416	$6,051,156	$1,975,518

The total value of the production was $48,047,577. Teller County (Cripple Creek) was by far the most important gold producer, furnishing 59.6 per cent. of the total; other large gold producers in their order were Lake, Gilpin, Ouray and San Miguel counties. Lake County (Leadville) was the largest silver producer, Pitkin County (Aspen), Mineral County (Creede) and Ouray following in order. Lake County was also the largest producer of both lead and copper. Pitkin and San Juan approaching it more nearly in lead than any others. In the total value of their outposts, Teller, Lake, Ouray, Pitkin and Gilpin were the leading counties.

MINERAL PRODUCTION IN GREAT BRITAIN IN 1899.

The mines and mineral workings of the United Kingdom are divided into three classes, those under the coal mines regulation act, those under the metalliferous mines act, and the open workings which come under the quarries act. The figures for the first and second classes of mines for the year 1899 have just been made public in advance of the publication of the full reports which are issued yearly. The production of minerals from mines coming under the coal mines act was as follows, in long tons:

	1898.	1899.	Changes.	
Coal	202,042,243	220,085,303	I.	18,043,060
Clay and shale	133,110	164,898	I.	31,788
Fireclay	2,783,219	2,931,091	I.	147,872
Iron pyrites	9,524	9,819	I.	295
Iron ore	7,901,046	7,775,868	D.	125,178
Limestone	38,633	32,395	D.	6,238
Oil shale	2,137,993	2,210,824	I.	72,831
Petroleum	6	5	D.	1
Sand	4,426	3,850	D.	576
Sandstone and gannister	111,754	105,031	D.	6,723

By far the most important product under this head is coal, which, in 1899, showed an increase of 8.9 per cent. over 1898. There was an increase in all the important districts, but over half the gain was in South Wales, where production was diminished in 1898 by the long strike of the miners.

The number of persons employed in mines coming under this class, in 1899, was 729,009, of whom 583,009 were at work underground and 146,000 on the surface. In 1898 the total was 567,124 underground and 139,770 surface, or 706,894 in all. The increase was 15,885 underground and 6,230 surface laborers, a total of 22,115 persons.

The products of the mines worked under the metalliferous mines act were as follows:

	1898.	1899.	Changes.	
Alum clay (bauxite)	12,402	8,009	D.	4,393
Arsenic	4,174	3,829	D.	345
Arsenical pyrites	10,823	13,429	I.	2,606
Barytes	21,175	23,664	I.	2,429
Chalk	1,878	4,558	I.	2,680
Clay and shale	86,641	113,543	I.	26,902
Copper ore and copper precipitate	9,131	7,786	D.	1,345
Flint and chert	2,313	2,529	I.	216
Fluorspar	56	733	I.	677
Gold ore	703	3,047	I.	2,344
Gypsum	134,193	158,326	I.	22,131
Igneous rocks other than granite	99,440	96,461	D.	2,979
Iron ore	2,167,100	1,956,796	D.	210,304
Iron pyrites	2,584	2,944	I.	360
Lead ore	32,679	30,990	D.	1,689
Limestone	555,625	589,729	I.	34,104
Manganese ore	231	415	I.	184
Ocher, umber, etc	2,800	4,056	I.	1,256
Rock salt	182,770	190,267	I.	7,497
Sand	31,130	27,341	D.	3,789
Sandstone	246,724	238,942	D.	7,782
Slate	177,664	178,811	I.	1,147
Tin ore (dressed)	6,588	5,662	D.	926
Uranium ore	26	7	D.	19
Wolfram ore	324	89	D.	235
Zinc ore	23,552	23,135	D.	417

The number of persons employed in this class of mines was 35,187, of whom 20,618 worked underground and 14,539 on the surface. In 1898 there were reported 20,173 underground and 14,058 surface workers; a total of 34,231. The increase last year was 445 underground and 481 surface, a total of 926.

The total production of iron ore from the two classes of mines above included was 9,732,664 long tons in 1899, and 10,068,146 tons in 1899, showing a decrease of 335,482. In addition to this there is a large production of iron ore from working under the quarries act. In 1898 this was 4,108,792 tons; the figures for 1899 are not yet reported. The imports of iron ore in 1899 were 7,055,178 tons, which would make the total supply for the year about 21,000,000 tons.

ANNEALING MALLEABLE CAST IRON.

Written for the Engineering and Mining Journal by Prof. H. M. Howe.

Mr. G. C. Davis has prepared an interesting paper on this subject for the March meeting of the Foundrymen's Association. In the first place he verifies the tradition that the hard or white iron in annealing gains both in bulk and in weight, in spite of the large loss of carbon. The increase in volume exceeds the increase in weight. At first this surprises us somewhat, for the end reaction of the operation is the change of cementite, Fe_3C, to ferrite, which, in itself, might be expected to lead to shrinkage rather than expansion, because ferrite is heavier than cementite. This is shown by the fact that the density of unhardened steel is inversely as the carbon content. I venture to suggest that the explanation of this increase in bulk is that the first reaction which takes place in the annealing is the decomposition of the cementite into ferrite and temper-graphite, and that is the liberation of this bulky temper-graphite within the metal itself which causes the expansion.

In addition to this cause of expansion is another which Mr. Davis makes clear; that some of the iron of the packing is deoxidized by the carbon of the casting, or the carbonic oxide resulting from the action of the packing on the casting, and that the iron so reduced welds to the casting. It is this which explains the gain in weight, which in some cases reaches 6.76 per cent. It is quite in harmony with these facts that iron annealed in sand lost weight instead of gaining it.

Another surprising point discovered by Mr. Davis is the absorption of a considerable amount of sulphur during the annealing, in one case 0.035 per cent. This gain, as might be expected, takes place chiefly in the surface of the casting. Thus, a bar which gained 0.035 per cent. sulphur on its outside, gained nothing in sulphur in its center. This sulphur, as Mr. Davis points out, doubtless comes from the mill scale used for annealing the castings, and thence from the wrought iron or steel, the oxidation of which made the mill scale.

GERMAN IRON TRADE.—The imports and exports of iron and steel in Germany for the full year are reported as below, in metric tons:

	Imports.		Exports.	
	1898.	1899.	1898.	1899.
Pig and scrap iron	407,889	675,793	272,070	235,194
Steel ingots and blooms	1,553	1,341	34,964	23,438
Manufactured iron and steel	112,079	160,643	1,312,457	1,244,303
Totals	521,521	837,777	1,619,491	1,502,935

There was a considerable falling off in exports and a large increase in imports, especially of pig iron; showing the effects of the large home demand. The more important exports of finished iron and steel in 1899 were 221,165 tons angles and shapes, 193,933 tons bars, 173,062 tons forgings, 150,239 tons plates and sheets, and 109,873 tons rails.

Exports of machinery—not included above—were 226,492 tons, against 192,612 tons in 1898. Imports were 95,810 tons, against 84,474 tons in 1898.

COAL IN ALGERIA.—In a communication last December on coal explorations in Algeria to the society known as La Reunion d'Etudes Algeriennes, M. Hebre observed that coal, or rather lignite, has been ascertained to exist at several points in the district of Constantine, at Bou-Saada, in the south of Alger, and at Boukanefs in Oran. Borings and important works have been carried out at Rouached, where a prospecting company has been formed that expended 100,000 fr., and, though the thickness of the seam did not exceed 10 cm., the fuel is of good quality. In the province of Alger no bore hole of any consequence has yet been put down for coal or lignite, capitalists fearing to risk the large sums that would be required. In Oran, explorations have been made at Boukanefs by MM. Thomas & Caputo, who have extracted a certain quantity of lignite, which, however, contains as much as 24 per cent. of ash. Most geologists declare that, although a few thin seams of lignite may be found in Algeria, it is not probable that bituminous coal will be met with in workable quantities.

LAKE SUPERIOR TRAFFIC.—The total value of the freight passing through the Sault Ste. Marie Canal during the season of 1899 is estimated at $281,364,750. The Cleveland "Marine Journal" gives the following notes of the season's traffic: "Steamer 'Malietoa,' owned by Pickands, Mather & Company of Cleveland, moved 8,215 net tons in a single cargo; steel tow barge 'John Smeaton,' owned by Bessemer Steamship Company, moved 8,339 net tons in a single cargo; steamer 'Presque Isle,' controlled in office of Cleveland-Cliffs Iron Company, Cleveland, moved through the canals during the season, 187,816 net tons; steamer 'Andrew Carnegie,' owned by Wilson Transit Company, Cleveland, covered 42,027 miles during the season; steamer 'H. W. Oliver,' owned by Wilson Transit Company of Cleveland, had 141,475,588 mile-tons to her credit for the season.

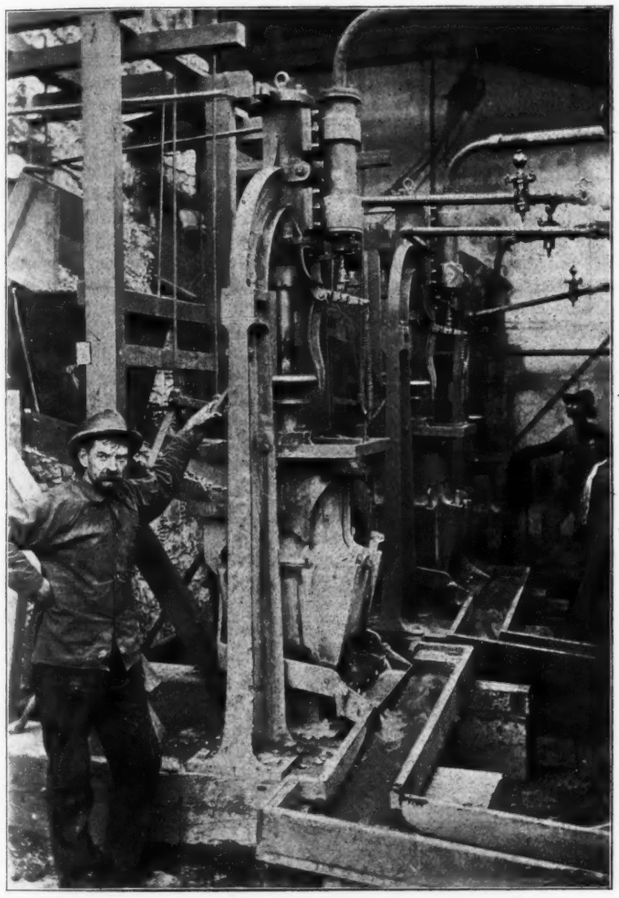
"Ten steam vessels of the largest kind had average cargoes throughout the season of 7,385 net tons; 18 averaged 6,423 tons; 19 averaged 5,420; 13 averaged 4,525; 114 averaged 3,404; 74 averaged 2,511. Of the tow barges, 4 averaged 8,179 net tons; 9 averaged 6,404; 13 averaged 5,790; 9 averaged 4,445; 25 averaged 3,552; and 35 averaged 2,309.

"The report also shows that 344 vessels using the canals are capable of carrying collectively in a single trip 1,308,603 net tons of freight. Forty-one vessels using the canals were 400 to 500 ft. length; 126 of 300 to 400 ft.; 267 of 200 to 300 ft.; 289 of 100 to 200 ft.; 109 of 100 ft. and less."

THE WOOD STEAM STAMP.

The accompanying illustration shows three Wood steam stamps in operation at the Hacienda San Jose, at San Luis de la Paz. The property is owned by the Dwight Furness Company of Guanajuato, Mexico. We have heretofore described the Wood steam stamp—"Engineering and Mining Journal," October 21st, 1899—which is built by the E. P. Allis Company of Milwaukee, for H. A. Newkirk & Company of Chicago. The work done by these machines in practice is best shown by the reports appended.

The first report, from W. W. Oliver, master mechanic at the Hacienda San Jose, San Luis de la Paz, says: "We have kept close and accurate account of the ore crushed in the last 7 days, which is 73 tons to the stamp in the 7 days, 24 hours per day. Crushing through 12-mesh screen, stamps dropping 180 drops per minute, having from 10 to 11-in. drop. The fuel used to the stamp in the 7 days amounts to 16 tons of



WOOD STEAM STAMPS IN OPERATION AT GUANAJUATO, MEXICO.

wood, a cord of this wood weighing 3,000 lbs. The oil used for each stamp in 7 days amounts to 4 gal. Shoes and dies wear from 10 to 14 days, screens last 5 to 8 days. We are having no trouble whatever with the stamps; at present they are giving good satisfaction."

With regard to the work of these stamps, the Dwight Furness Company reports further, under date of December 17th, 1899: "Referring to the four Wood steam stamps which we have had working for the past 6 months on our San Jose Mill at San Luis de la Paz, this State, will say that in many respects they are a very satisfactory machine. These machines are working on a tough quartz ore carrying a small percentage of lead and copper, low-grade silver and no gold. The ore is ground through 12-mesh screen and the pulp passed to Frue vanner (corrugated belts) concentrators. In adjoining mill we are treating the same ore with mill of 20 gravity stamps. We find that the forced discharge gives a more uniform product for concentration with less slime than from the gravity stamps, double discharge mortars. Wear of screen and of shoes and dies but slightly more than with gravity stamps.

"Average grinding capacity, including all lost time, is from 8 to 10 tons ore per day, 3 Wood stamps doing a little more than 10 gravity stamps. Fuel consumption is greater with the Wood stamp than with gravity stamps, per ton of ore crushed, but might not make important factor with cheap fuel.

"We believe the Wood steam stamp especially well adapted for a gold mill, as it should give best possible amalgamation and concentration pulp. Oil is readily kept out of pulp and everything clean and neat. Water feed can be adjusted to needs, making any desired thickness of pulp without choking the mortar."

The Wood stamp is also reported as doing excellent work at mines in Arizona and elsewhere. It is a machine of careful and compact design, and should be useful in many places.

THE BESLY BAND GRINDER.

We illustrate herewith a band grinding machine made by Charles H. Besly & Company, of Chicago. The complete machine consists of pedestal, as shown, countershaft and spindles to hold either one or two emery band polishing wheels. These wheels are made of cast iron. An elastic surface is produced by a felt covering. The emery or other abrasive material is a piece of emery cloth which is tightened firmly around the wheel. To reset the wheel or change the grade of emery, it is necessary only to remove a band and replace it with another, an operation requiring only a minute of time. One of these wheels will take the place and do the work of a large number of polishing wheels. The wheels when used with emery bands are always perfectly balanced and ready for use. This machine is suitable for places where skilled polishers are not employed, and are compact and convenient in form. The wheels are 12 in. diameter and 2½ in. face. The machine is furnished in various forms, carrying one or two wheels, and with or without countershaft. The weight varies according to size from 600 lbs. to 825 lbs., complete.

THE BESLY BAND GRINDER.

MINERAL COLLECTORS' AND PROSPECTORS' COLUMN.

(We shall be pleased to receive specimens of ores and minerals, and to describe and classify them, as far as possible. We shall be pleased to receive descriptions of minerals and correspondence relating to them. Photographs of unusual specimens, crystals, nuggets and the like will be reproduced whenever possible. Specimens should be of moderate size and should be sent prepaid; we cannot undertake to return them. If analyses are wanted we will turn specimens over to a competent assayer, should our correspondent instruct us to do so and send the necessary money.—Editor E. & M. J.)

84.—Graftonite.—S. L. Penfield, in the "American Journal of Science," describes this new mineral from Grafton, New Hampshire. It occurs as a lamellar intergrowth with triphylite in a pegmatite. The crystals are monoclinic. When fresh the mineral has a delicate salmon color, resembling lithiophilite, but on account of the oxidation of the iron, principally in the triphylite, the color is usually dark. The specific gravity is 3.7, hardness 5, and luster vitreous to resinous. The analysis, the method of which is described in outline, gave the formula $R_3P_2O_8$, in which R stands for bivalent iron, manganese and calcium.

89.—Bornite.—Some very pretty specimens of bornite, it is said, are being taken from the Index-Independent Mine at Index, Snohomish County, Washington. The bornite is scattered in shot-like layers, also as scales, through a metamorphosed granite, and occurs in connection with chalcocite.

90.—Artificial Graphite.—We have received some samples of the artificial graphite manufactured at Niagara Falls by the Acheson Graphite Company from anthracite coal. The lump graphite has the luster and feel of the natural mineral, but its specific gravity is noticeably low—lumps floating in water. This is, no doubt, partly because the lumps are more or less porous. The powdered graphite, suited for the manufacture of paint, is a lusterless black powder. A grade adapted to the manufacture of crucibles is in small grains like a moderately coarse black sand.

91.—J. M.—Titaniferous Iron Ore.—The chunk of black rock you send is a magnetic iron ore. It is of little commercial value at present, as it contains titanium. Its mineralogical name is menaccainte. Such titaniferous iron ore is very abundant in the Adirondacks.

92.—L. F. C.—Mineral Paint.—The sample of mineral used as paint, which you send, is an impure iron ore, apparently limonite with a little hematite. It is of fair quality, and when washed, dried and ground, might be worth $15 per ton at New York City.

93.—C. A. S.—Mica.—The sheet of muscovite mica you send is very clear, and except for a few small cracks, is of excellent quality. The value of a mica property depends upon the size of the clear sheets that can be got out and the proportion of waste mica that must be thrown away. In most mica quarries the amount of waste is very great. Sheets of the size you sent, 3 by 4¾ inches, are worth $6.50 per pound in New York.

94.—Native Silver.—Some beautiful specimens of native silver ore are being taken from the Lucky Boy Mine, near Chloride, Arizona.

95.—Cerussite.—Perhaps the finest specimen of cerussite (lead carbonate) ever found in the United States is on exhibition in the office of the Pilcher Lead Company at Joplin, Mo. It shows beautiful crystallizations, twins being numerous, and displays the usual adamantine luster of carbonate of lead. The specimen was taken from the once celebrated Cerussite Mine in Colorado.

96.—Native Gold.—The Field Museum of Chicago displays a superb collection of crystallized gold specimens, most of them from the famous Breckenridge District of Colorado. The specimens are in arboresent masses, showing irregularly developed crystalline faces, like most crystallized gold specimens, and are extremely attractive. They are, perhaps, the finest possessed by any museum in the United States.

QUESTIONS AND ANSWERS.

(Queries should relate to matters within our special province, such as mining, metallurgy, chemistry, geology, etc.; preference will be given to topics which seem to be of interest to others besides the inquirer. We cannot give professional advice, which should be obtained from a consulting expert. Nor can we give advice about mining companies or mining stock. Brief replies to questions will be welcomed from correspondents. While names will not be published, all inquirers must send their names and addresses. Preference will, of course, always be given to questions submitted by subscribers.—Editor E. & M. J.)

Tellurium.—Is there a market in the United States for metallic tellurium in the form of slimes?—J. J. V.

Answer.—Tellurium has, at present, no industrial uses, and there is no market for it in any form. Only a very small quantity could be sold in the course of a year.

Deterioration of Dynamite.—Will you kindly inform me whether dynamite will deteriorate in 6 months or a year when stored in original cases in a reasonably dry frame building exposed to sun weather?—H. K.

Answer.—Dynamite deteriorates in two ways. 1. By loss of nitroglycerine, this being a slowly volatile substance. The loss would probably be slight if the dynamite were stored as stated. 2. By chemical changes in the dynamite from various causes. Dynamite, for instance, that has been stored where it froze and thawed alternately, becomes "tender," and is liable to play odd tricks. Dynamite should not only be kept dry, but should not be exposed to sudden changes of temperature.

Iron Supports for Mines.—Can you tell me whether iron and steel are used anywhere in place of timbers for supporting purposes in mines?—C. T. R.

Answer.—Iron and steel supports are used in place of timbers to a considerable extent in England, France and Germany. They are, however, very little used in this country. One reason for this is the lower price of timber in this country; another is that we do our mining here in a much shorter time than in Europe. That is, it is the custom here to work at such a rate that deposits are worked out much sooner than is the rule in European mines, and the more permanent supports are not needed.

Hand Concentrating Machines.—Is there a standard concentrator made that can be run by hand or power, that will give reasonably correct results, and concentrate, say, from 1 to 3 tons per day? We need a machine that will do test work and will show whether it is advisable to put in a larger plant, and at the same time would be of some value as a testing machine in connection with a new plant. Is there any such machine made? I would like to know, also, if there is a hand-power crusher made to match such a concentrator.—M. O.

Answer.—There are several machines made for concentrating by hand power. For ordinary purposes small jigs or bumping tables can readily be worked by hand power. They can be arranged also to run by power should it be considered advisable to add power plants to your works at any time. Hand jigs have been and still are used extensively in the Joplin zinc region for concentrating ore. You will find descriptions of such machines in Le Neve Foster's work on "Ore and Stone Mining," and in other text books. Some hand jigs—such as Vezin's—which, though intended for sampling purposes, might be used for small plants, have been described in the series of articles by Prof. Richards on "Progress in Ore Dressing," in the different volumes of "The Mineral Industry."

There are several forms of hand crushers made which can be used for prospecting purposes or in working small quantities of ore. One of these was described in the "Engineering and Mining Journal," March 3d, 1900.

Corundum.—Can you give me some information regarding the market value of corundum, and where the market is? What are the uses to which corundum is put? Where does the present supply come from?—M. E. H.

Answer.—The market value or quotation for the best North Carolina corundum, in New York, is 7 cents per pound. Massachusetts corundum sells a little lower. The market for this mineral is at present entirely with the makers of emery wheels, abrasive paper and similar materials. The abrasive use is the only one to which corundum is put at present, although it has been proposed, in the case of the Canadian deposits, to concentrate the mineral and free it from impurities as far as possible and to use it as an ore or raw material in the manufacture of aluminum. The production of corundum in the United States last year was about 800 tons, and the value at the mines was about $80 a ton. Corundum is mined chiefly near Chester, in Western Massachusetts, and in Clay and Macon counties, in Western North Carolina. There are other deposits in North Carolina and North Georgia, which are not at present worked. Important discoveries of the mineral have recently been made in Canada. There is a wide belt in Western Ontario where corundum of a high grade is found. These deposits have not yet been worked to any considerable extent, although there have been a number of leases made by the Ontario Mines Department, and it is understood that working on a large scale will be begun during the present year.

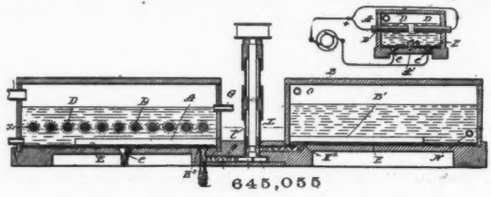
PATENTS RELATING TO MINING AND METALLURGY.

UNITED STATES.

The following is a list of the patents relating to mining and metallurgy and kindred subjects issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

Week Ending March 13th, 1900.

645,055. APPARATUS FOR PRODUCING CAUSTIC SODA. Henry S. Anderson, Springfield, Mass. In an electrolyzing apparatus in combination an electrolyzing-vat having an anode of an electric cir-



645,055

cuit and a fluid metal cathode, a second vat the floor of which is at a higher level than that of said first vat, connections to convey said metal between said vats, and means to convey said metal from said vat through one of said connections to said second vat.

645,061. VANNER. Harrison T. Benson, Denver, Colo. In an ore-concentrator, an oscillating frame, comprising rolls at the ends thereof, and a traveling belt or apron passing around said rolls, bearing-blocks for said rolls, hinged supports for said blocks having elongated slots therein in which said blocks are adjustable, and means for locking said supports to maintain said blocks normally in operative position.

645,066. METHOD OF ELECTRIC WELDING. Robert P. Brown and Franklin E. Morse, New York, N. Y. The method consists in holding the pieces together at the seam or joint, and concentrating heat from two external heat sources upon the metals at opposite sides of the join, the relative thermal intensities at the point of concentration being so proportioned that the metals of the parts shall be brought to their respective welding or brazing temperature approximately the same time.

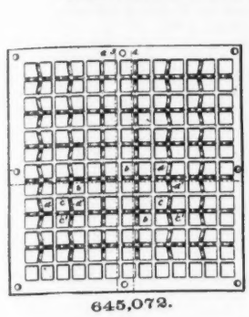
645,072. SCREEN. George W. Cross, Carbondale, Pa. An integral screen-surface provided with substantially-quadrilateral interstices bounded by longitudinal and transverse webs, the alternate webs of each description being arranged in the plane of the working surface, while the remaining webs of each description are undulatory or sinuous in form.

645,109. HYDRAULIC AIR-COMPRESSOR. Norman J. Lockyer, Lenzie, Scotland. A piston-valve controlling both water-openings and the air-inlet, a tumbler-lever connected with said valve, and a float adapted, when it arrives near the upper end of its course, to operate said lever and thus cause the valve to close the water-inlet and open the air-inlet and water-outlet, and when said float arrives near the lower end of its course, to open the water-inlet and close the air-inlet and water-outlet.

645,178. PROCESS OF REDUCING EASILY-OXIDIZABLE METALS. Casper W. Miles, Cincinnati, Ohio. The process consists in supplying air to a body of fuel, passing the products of combustion around a mass of the ore and carbon, subdividing the current of said products of combustion, passing a portion thereof through said mass of ore and carbon, cooling the vapor so produced and thereby condensing the metallic fumes, mixing the uncondensed residual gas

with the remaining portion of the current of the products of combustion, and conveying them in contact with the raw ore.

645,179. APPARATUS FOR REDUCING ZINC. Casper W. Miles, Cincinnati, Ohio. In a metallurgical furnace a fire-box adapted to sustain a body of combustible material; a reduction-chamber spanning the offtake from said fire-box and communicating therewith; means



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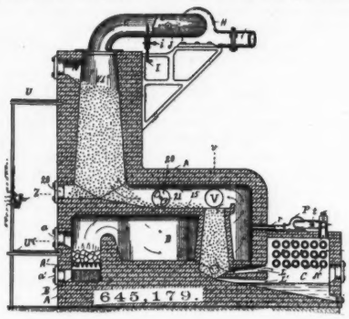


645,179.

for feeding a charge of ore and carbon to the reduction-chamber, and means for drawing a regulated fractional quantity of the products of combustion from said fire-box through the charge of ore in said reduction-chamber and an offtake-flue for the remaining products of combustion.

645,182. REVERBERATORY FURNACE. Henri Pahut, Touille, France. A furnace composed of a fire-box, a furnace oven communicating therewith, a second furnace or oven communicating with the first named, a rear furnace or oven communicating with the second, and a fourth furnace or oven placed below and connected with the rear furnace just named, said fourth furnace having a chimney connection.

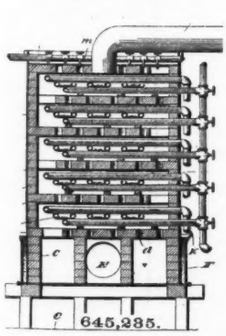
645,188. SEPARATOR FOR GOLD AND SILVER BY AMALGAMATION. Frank A. Rider, Vekol, Ariz., assignor to the Detroit Reduction Company, Cripple Creek, Colo. The combination with a tight vessel adapted to contain a body of mercury and means for applying heat under the body of mercury, of a series of jet-pipes adapted to discharge upwardly from the surface of said body of mercury, a valve in each jet-pipe, a pipe common to all of said jet-pipes and a mercurial-vapor generator communicating with said common pipe.

645,205. PROCESS OF REFINING IRON. Frederick W. Hawkins, Detroit, Mich., assignor of one-fifth to Thomas A. E. Weadock, trustee, same place. A method consisting in first atomizing or breaking up into minute particles and scattering of the molten metal, and in then filtering the separate particles through a bed of commuted basic material.

645,207. KILN. Josef Lengsholz and Christian Lengsholz, Porz, Germany. In kils for burning earthenware, and the like, the vault openings; a valve in each opening and a cowl surrounding each opening.

645,226. APPARATUS FOR BURNING PEAT. Georg Gercke, Hamburg, Germany. The combination of an outer casing having a feeding end and a discharge end, a combustion-chamber arranged below the discharge end and extended horizontally therefrom to near the feeding end, said combustion-chamber being divided to form a tortuous passage for gases of combustion, a plurality of parallel tubes traversing said combustion-chamber, a revoluble feeding-hopper having a slot, means for forcing the raw peat through said tubes, a rotary cutter contiguous to the termini of said tubes, an automatic device for feeding the dry peat to the combustion-chamber and an outlet for the steam generated from the moisture in the peat.

645,235. ACID-COOLING TOWER. Constantin Ruggaber, Richmond, Va., assignor of one-half to Howard Harlan, same place. A cooling-tower having walls of masonry with outer sheathing of lead and mounted on a suitable platform, a series of alternately-arranged perforated shelves supported on the inner walls of the tower, a



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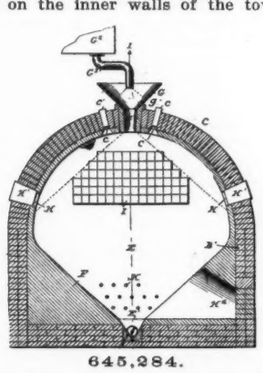

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water-cooling jacket surrounding the portion of the tower below the bottom of said shelves, the inlet-pipe passing water-tight through the walls of said jacket and sheating, and the coils between each shelf, the outlet end of each coil being downwardly disposed and positioned to discharge into said cooling-jacket.

645,284. METHOD OF ELECTRICALLY TREATING MATERIALS. Edward G. Acheson, Buffalo, N. Y. The method consists in continuously supplying the material to be treated to the apex of a pile having sides of the natural gravity slope, and heating the same by passing all portions of the material between electrodes the working faces of which are within the slope of the pile.

645,285. METHOD OF MANUFACTURING GRAPHITE. Edward G. Acheson, Buffalo, N. Y. The method consists in treating an aggregation of pieces or particles of carbonaceous material which contains inherent impurities capable of forming carbide, but less in amount than enough to convert the whole into carbide, and naturally distributed with substantial uniformity in the piece and which can be heated to a charring temperature without destroying the relative positions of the carbon and such associated impurities, by heating said material to a high temperature and continuing such heating until the individual pieces have been progressively converted into graphite in greater proportion than would be produced by decomposition of the relatively-small amount of fixed carbide capable of being formed by the impurities naturally present in said pieces.

645,305. HEATING-FURNACE. Samuel T. Wellman, Cleveland, Ohio, Fred H. Daniels, Worcester, Mass., and Charles H. Wellman, Cleveland, Ohio. A heating-furnace for heating cast-steel ingots of a length and interior height and width to receive the ingots in upright position and in a row, and provided with internal guides which support the bases and sides of the ingots as they move through the furnace from one end thereof to the other leaving within the furnace a clear space around the top, bottom and sides of the ingots for the passage of the flame, combined with means for pushing the line of ingots through from one end of the furnace, and with retarding means at the opposite end of the furnace for retaining the ingots in upright position and preventing them from tipping endwise.

645,306. ROLLING MILL. Samuel T. Wellman, Cleveland, Ohio; Fred H. Daniels, Worcester, Mass., and Charles H. Wellman, Cleveland, Ohio. Combination of series of pairs of reducing rolls provided with grooves or passes; roller tables and twisting guides.

645,353. DREDGING MACHINE. Laurence C. Eisenhut, New York, N. Y. A dredging-machine provided with a foundation or bed plate having axial and peripheral bearing surface or zones with lubricating grooves or ducts and a frame constructed to move directly upon said bearing-surfaces.

645,361. BRIQUETTE. Charles F. Hood, Connellsville, Pa., assignor to Maria L. Hood, same place, and John B. Booth, Sewickley, Pa. A binder for briquettes, consisting of molasses, starch and water.

645,392. COMPOSITION FOR MANUFACTURING ARTIFICIAL STONE. Wenzl Heinl, John Heinl, and Charles Beyerl, Etna, Pa. A composition consisting of sand, cement, distilled water, carbonic acid, saltpeter, alcohol and potash.

645,409. ROLLING-MILL. Peter M. Weber, Homestead, Pa. Filed Sept. 22, 1899. In a universal rolling-mill, the combination with a housing having a pair of cogging-rolls mounted therein, of a housing having an upper and a lower pair of vertical adjustable bearings mounted therein, a horizontal roll journaled in each pair of said bearings and each adjusted toward one another by the said bearings.

645,425. PROCESS OF CARBURETING. Edgar A. McAllister, Baltimore, Md., assignor, by mesne assignments, to the McAllister Gas-Light, Heat and Power Company, of West Virginia. The process of carbureting aeriform fluid consisting in compressing and cooling the fluid to eliminate the humidity and then subjecting the compressed and cooled fluid to hydrocarbon while it is expanding.

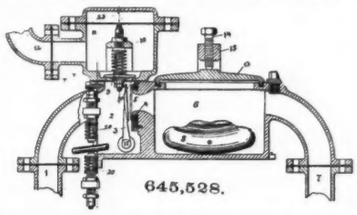
645,478. ACCUMULATOR. Henry Leitner, London, England, assignor to the Electrical Undertakings, Limited, same place. The combination with peroxide plates, separting-pieces of highly-elastic material placed between the said plates and binding them firmly together, of zinc plates having a core of insulating material and distance-pieces or blocks.

645,490. HUMID PROCESS OF EXTRACTING THE METALS BISMUTH OR ANTIMONY FROM THEIR SULPHIDE ORES. John Ranald, London, England. The process consists in crushing the ore to be treated and bringing a solution of ferric chloride to or about boiling temperature and introducing the crushed ore into the said solution, separating the liquor from the tailings and then precipitating from the liquor the bismuth or antimony by means of metallic iron, then converting the ferrous chloride thus produced to ferric chloride and metallic iron.

645,485. CARBURETER. Edgar A. McAllister, Baltimore, Md., assignor, by mesne assignments, to the McAllister Gas-Light, Heat and Power Company, of West Virginia. In an apparatus for carbureting aeriform fluids, the combination of a carbureter; an air-compressor; and a compressed-air tank having means for removing the water of condensation therefrom.

645,498. PIPE-MOLDING MACHINE. Harry J. Taylor, Burlington, N. J. The combination with a hollow cylindrical ramming device, of a plurality of hinged bits at the periphery of said device, so as to be capable of rocking or swinging laterally.

645,528. SIPHON-ELEVATOR. Jules Lemichel, Paris, France. The combination of a suction-pipe and a discharge-pipe, with a suction-



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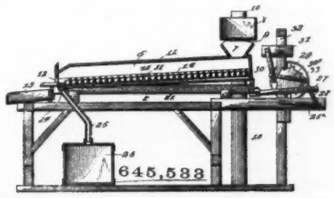
chamber and a discharge-chamber into which the two pipes enter, said chambers being separated by a valve, the discharge-chamber containing an elastic sack filled with air or gas.

645,533. CONCENTRATOR. John Mauldin, Sacramento, Cal., assignor of two-thirds to Henry E. Kleinsorge and William E. Kleinsorge, same place. In a sluice-box, the combination of longitudinal ribs,



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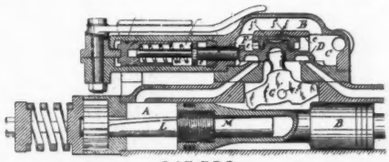
transverse bars and riffle-plates formed with riffles presented with their vertical faces against the flow of water, overlapped with spaces between them and secured upon cross-bars between the ribs and wedges inserted between the overlapped portion of said plates, above said cross-bars.

645,536. ENGINE FOR ROCK DRILLS. Patrick H. Reardon, San Francisco, Cal. In a rock-drill, a cylinder, a piston therein and a suitable



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valve controlling the actuating fluid, means adapted to control said valve whereby the stroke of the piston is lengthened or shortened at will, in combination with means for relieving the pressure on said valve.

PERSONAL.

Mr. W. H. Wiley, of Idaho Springs, Colo., is in Montana.

Mr. J. M. Stewart, of Butte, Mont., has been in Los Angeles, Cal.

Mr. Samuel Newhouse arrived in Salt Lake from San Francisco on March 24th.

Prof. J. C. Carrea, of Las Cruces, N. M., is to represent New Mexico at the Paris exposition.

Mr. F. J. Conroy, of Pittsburg, Pa., who is interested in the mines of the Southwest, is at Yuma, Ariz.

Mr. R. A. F. Penrose, one of the principal owners of the Commonwealth Mine at Pearce, Ariz., was in Denver, Colo., last week.

Mr. Edwin A. Carter, of Springfield, Mass., vice-president of the Shannon Copper Company, has been visiting Clifton, Ariz.

Mr. C. E. Stubbs, of the Perkins Tunnel Company at Idaho Springs, Colo., has returned from a trip to Paris to meet the backers of his company.

Mr. Angus McLean, of the Shafter Mine, Idaho Springs, Colo., has been in New York to meet the owners of that property and discuss its future working.

Mr. Austin King, Jr., recently resigned from the McClure Coke Company's engineering corps to take the position of field engineer for the Pittsburg Coal Company.

Mr. Joseph Hohisel, who for 9 years was in charge of the Smuggler concentrating works, has been appointed superintendent of the Stark Milling Company, of Aspen, Colo.

Mr. George H. Robinson, who has been looking after his Utah interests, is in Idaho on a professional errand. He will return to Butte, Montana, the coming week.

Mr. W. W. Tiner, of Iowa Hill, Cal., accompanied by Mr. J. O. Jones, of Sierra County, Cal., is on his way to Siberia via New York and St. Petersburg to superintend mining properties.

Mr. Robert Ramsay, Jr., has resigned as superintendent of the H. C. Frick Coke Company's Standard plant to accept a similar position with the Virginia Coal and Iron Company, at Stonega, Va.

Mr. Anson Phelps Stokes devoted several days the past week to Utah en route to Ione, Nevada. He is president of the Nevada Mining Company and during this visit the scope of the work for 1900 will be decided on.

Mr. W. J. Lewis, of the Doric Tunnel, Georgetown, Colo., has gone to England to discuss future operations with the English financiers who recently arranged to raise $60,000 to continue crosscutting and acquiring claims.

Mr. F. A. Gourley, an old hydraulic miner of Nevada County, Cal., sailed on the "Gaelic" from San Francisco on March 23d for Siberia to take charge of an extensive mining property owned by an Eastern company.

Mr. James Mack, chief engineer for the Coulter & Huff Coal Company, has resigned to accept a position as superintendent of the Standard works of the H. C. Frick Company, at Mt. Pleasant, succeeding Robert Ramsay, Jr.

Mr. W. R. Ashworth, who has had considerable experience in mining in British Columbia, has formed a partnership at Halifax, Nova Scotia, with Mr. F. H. Mason. The new firm will give attention to reports on Nova Scotia mining properties.

Mr. J. W. P. Gazzam, of St. Louis, has been at Denver, Colo. Mr. Gazzam was formerly manager of the Small Hopes Mine of Leadville, but of late years has been managing one of the great mines of the Transvaal, South Africa. He is making arrangements to return to South Africa when the war is over.

OBITUARY.

W. J. Rainey, of Cleveland, O., the prominent coal and coke operator, died in Baltimore at the Johns Hopkins Hospital from the effects of an operation. He was one of the largest coke producers in the country, controlling nearly 2,300 ovens in the Connellsville, Penn., district, and was a strong rival of the H. C. Frick Coke Company.

William J. Rainey was born in Bellmont County, O., 66 years ago. He lived on his father's farm till he was grown to manhood. His father was William Rainey, a native of Ireland. The farm contained a fine tract of coal, and the energetic son opened this tract and began to ship coal down the Ohio River to Cleveland and other points. He moved to Cleveland and engaged extensively in the coal business, handling not only the output of the mine on his father's farm, but the coal of many other mines as well. In 1877 he saw that keen competition was ruining profits, and he resolved to make a venture in the Connellsville coke region. For two years he acted as selling agent, in the meantime casting his eye about for coking coal lands. He made his first purchase at Fort Hill in 1879, near Vanderbilt, and built 153 coke ovens. His next purchase was the coal tract of the Grace works at Moyer, on the Southwest branch, where he erected 408 ovens. Next he purchased the Hare farm near Vanderbilt and built the big Paul works of 417 ovens. He added the Elm Grove works and coal lands to his holdings in 1891 and the next year bought the Mt. Braddock works from the Robert Hogsett estate. Shortly after he purchased the Wharton tract of coal near Mt. Pleasant, paying $500 an acre, but never erected coke ovens there till this year, when he completed 126 at what he called the Acme coke works. He extended his holdings about in the vicinity of Vanderbilt and erected the Rainey works. He especially desired to get the whole of the Revere coal tract just south of Uniontown and succeeded in getting half the tract, of 1,250 acres, the National Steel Company getting the other half. Rainey went to Europe in 1899, leaving word to have every effort made to get the whole of the Revere tract if possible, offering to pay as much as $1,000 an acre for the coal. On this tract he had begun the erection of 500 coke ovens, which will be in operation toward the end of this summer.

Rainey's holdings were not diversified. He believed in the future of coke, and all his energies were directed to building up this industry. It is difficult to gauge the value of his estate. He owned 2,231 coke ovens, of which 2,151 are active and 80 are building. The number of coke ovens at each of his plants now is as follows: Elm Grove, 218; Fort Hill, 186; Grace, 408; Mt. Braddock, 540; Paul, 500; Rainey, 183; Union, 70; Acme, 126. The Union works near Scotdale he purchased in 1898. With these plants there are coal lands to afford coal for many years to come. The ovens in course of erection are 50 at Mt. Braddock and 30 at Rainey.

W. J. Rainey was married to Eleanore Mitchell, at Jefferson County, O., in 1864. Mrs. Rainey survives her husband, as do 4 children.

SOCIETIES AND TECHNICAL SCHOOLS.

Massachusetts Institute of Technology.—Metallography is now receiving much attention at the Institute. The lectures on the subject are given by Mr. Albert Sauveur, a graduate of the class of 1899, who is director of the Boston Testing Laboratories. At present an investigation is in progress on boiler tubes. Samples of tubing which have been subjected to a great variety of conditions are being studied to find the effect of the various processes of manufacture and indicate what treatment is harmful to the life of the tube. Another subject under investigation which possesses a theoretical interest only is the isomorphism of seledium and tellurium.

Society of Chemical Industry, New York Section.—At the regular meeting of the Section on March 23d, the following papers were read: "Process for Sensitizing Paper" (with demonstration), R. C. Schuppaus; "Smokeless Powder" (with demonstration), H. C. Aspinwall; "Statistics of Custom House Laboratory Work," R. W. Moore; "Varnish Analysis," P. C. McIlhiney; "The Determination of Sulphur Dioxide in Sulphites and Thiosulphites With Iodine," M. L. Griffin. There was a large attendance, and the papers were listened to with much interest.

The proposed excursion of members to London and Paris during the Paris Exposition has been given up, because of the difficulty of getting accommodations on steamships.

Engineers' Club of St. Louis.—At the meeting on March 7th, 16 members and 9 visitors were present.

The paper of the evening was on "Experiences in the Operation and Repair of the Mississippi River Hydraulic Dredges," by Mr. F. B. Maltby. From July, 1898, to May, 1899, Mr. Maltby was in charge of dredging operations under the Mississippi River Commission. During this season the fleet consisted of 5 dredges, 9 steamboats, 5 pile-drivers, and the necessary barges, etc. An interesting description was given of the work necessary to open a channel. One of the boats in dredging a channel removed 54 logs varying from 8 to 50 in. in diameter. An account was also given of field tests made with the dredges before acceptance of the boats from their builders. It was feared that test conditions were not of the same character as working conditions, the former being made by measuring the discharge deflected for a brief interval of time, less than a minute, into a measuring barge. The tests proved very satisfactory. Figures were given of cost of operating the dredges. A number of diagrams and sketches were shown indicating the amount of wear of the main sand pumps, reference being made to one case where in the lower half of the casing, on the port side, a slit about 18 in. long was worn entirely through. The linings of the pumps all show considerable wear at the end of the season. Aside from replacing this lining, the efficiency of the pump is largely reduced. Investigation made in 1899 showed that with an increase of the original clearance from ⅛-in. to ¾-in. the efficiency was reduced 50%.

Mr. Maltby also described a series of experiments made with the steamer "Mississippi." The propelling wheel of the steamer is 22 ft. in diameter, 20 ft. long, with 20 buckets. Experiments were made with a view to increasing the speed of the boat. It was thought the wheel had too many buckets. A reduction of one-half the wheel area increased the speed 0.2 of a mile per hour, with an expenditure of 10% more power. The conclusion reached was that an improvement could be made by rebuilding the wheel, using only 18 or 19 arms, but this would have been impracticable.

INDUSTRIAL NOTES

The new power house for the Pittsburg Reduction Company at Shawenegan Falls, P. Q., Canada, will be furnished by the Berlin Iron Bridge Company, of East Berlin, Conn.

The Randolph-Clowes Company, of Waterbury, Conn., will, it is stated, be bought out by Buffalo, N. Y., men and its seamless brass and copper tubing, its rolling and rod mills, will be removed to Buffalo.

Randolph Brandt, of New York City, reports that the sale of the Selden patent packing has been larger during the past 3 months than at any time since its manufacture started. Shipments have been made to the West Indies, Mexico, South Africa and Europe.

The Climax Manufacturing Company, of Corry, Pa., manufacturers of Climax tramway locomotives and logging cars, is building a locomotive and 6 flat cars which will go to Cape Nome, Alaska, for use on a new road to be built up the river from Nome City, 12 miles.

The Brier Hill Iron and Coal Company, manufacturers of Brier Hill Portland cement, at Youngstown, O., has closed down its cement department for repairs. The plant is equipped to turn out about 225 bbls. of cement daily, and it is intended to increase this output to 325 bbls. daily.

At the recent annual meeting of the Troy, N. Y., Steel Company, the following directors were elected: H. H. Rogers, New York; Frank S. Witherbee, Port Henry; Junius S. Morgan, Princeton, N. J.; George A. Bell, Troy; William Kemp, Troy; Charles W. Tillinghast, Troy; Lysander B. Danforth, Lansingburg.

The American Sheet Steel Company has filed articles of incorporation at Trenton, N. J. The company has a capital of $52,000,000, and is a combination of sheet mills in the Pittsburg District. The incorporators are D. W. Morrow, P. J. McCook, Alfred L. Curtiss, J. J. Treacey, C. J. Fay, W. E. Dwight, T. M. Day, A. P. Bartlett, and Clifford C. Hay.

At the annual meeting of the stockholders of the Pennsylvania Steel Company, the annual report showed gross profits from operation of $2,330,171, and a net profit of $1,372,375. The following were elected directors: Edgar C. Felton, Luther S. Bent, Effingham B. Morris, F. W. Hunnewell, John Cassels, George Wood, Evans R. Dick, William D. Winsor and Arthur Brock.

The F. M. Davis Iron Company, of Denver, Colo., will erect a building, to cost $40,000, to replace the one recently burned. It will cover a frontage of 200 ft. and will run back 132 ft. The front portion will be for the offices of the firm, and the rear will be used for the boiler and machine shops. The company expects, with the facilities which the new building will give, to employ constantly 500 men.

The United States Cast Iron Pipe and Foundry Company has just shipped 200 tons of 4-in. cast iron pipe to Japan and a like quantity of 3-in. and 4-in. pipe to Cuba. Mitsui & Company, of New York City, have contracted with the company for 300 tons of 3-in. pipe, which will be utilized for telephone systems in Japan. Most of the pipe in these contracts is manufactured at Burlington, N. J.

A solid train of 21 cars of steel billets—462 tons—was shipped from the Ensley, Ala., steel plant March 22d to the American Steel and Wire Company, at Worcester, Mass. This was the first delivery of a solid train load from the Ensley plant. While much of the product is to be used in the steel wire, rod and nail mill adjoining the plant, no little of the product will be shipped out of the district. The steel sent to Worcester had to pass through Pennsylvania.

It is stated that the Port Huron Salt Company, with a capital of $350,000, is being organized to act independently of the National Salt Company. The officers are J.W. Cooper, of Saint Paul, pres-

ident; Hartson G. Barnum, of Port Huron, vice-president; E. M. Holbrook, of Chicago, secretary, and Milton R. Wood, of Wyandotte, general manager. The company intends to build a 2,500-bbl. plant at Cayuga Lake, N. Y., and is erecting a similar plant at Port Huron, Mich. A plant may be built in Kansas.

At the recent annual meeting of the Pratt & Whitney Company, at Hartford, Conn., the following directors were elected: F. A. Pratt, Amos Whitney, R. F. Blodgett, Rowland Swift, Daniel R. Howe, W. W. Hyde, John R. Redfield, George W. M. Reed and F. C. Sumner, Hartford; C. C. Cuyler, A. C. Vaughan, Robert S. Walker and E. B. Blackford, New York, and T. J. Nicholl, Rochester, N. Y. The directors re-elected officers as follows: President, Amos Whitney; vice-president, T. J. Nicholl; consulting engineer, Francis A. Pratt; secretary, R. F. Blodgett; treasurer, J. C. Stirling.

TRADE CATALOGUES.

"Only a Pump, You Say," is the unique title of a little 16-page pamphlet which tells why the Merrill pneumatic pump is a good thing and gives a long list of testimonials from users.

Simonds & Wainwright, mining and chemical engineers of New York City, send out a little pamphlet giving the schedule of fees charged for analytical and assay work at their laboratory.

Mine car hitchings, which are stated to be made of the best material obtainable, are described in a 12-page pamphlet issued by William Harris & Son, of Pittsburg, Pa. The company states that every link in its hitchings is welded by hand.

The Wells Manufacturing Company, of New York City, issues a 16-page pamphlet setting forth the merits of the Wells light. The company states that over 15,000 of these lamps have been sold and recommends them for work about smelters and mills, quarries and open pit mines and for contractors' use. The lamps are regularly made in 5 numbers from 800 to 4,000 candle power.

Catalogue No. 48, published by Fraser & Chalmers, is a well-bound and well-printed booklet of 139 pages, describing the Riedler air and gas compressors and blowing engines. The Riedler compressor is stated to apply the same principles of mechanically controlled valves that were so successfully developed in the Riedler pump. The valves and the governor are described in detail and the illustrations show some notable installations of Riedler pumps and compressors, single, duplex and compound. The catalogue contains a number of useful tables and is well worth looking over by anyone interested in compressed air.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the "Engineering and Mining Journal" what he needs he will be put in communication with the best manufacturers of the same.

We also offer our services to foreign correspondents who desire to purchase American goods of any kind, and shall be pleased to furnish them information, catalogues, etc.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, and have no pecuniary interest in buying and selling goods of any kind.

GENERAL MINING NEWS.

ALASKA.

Cape Nome.

Secretary of War Root says in his reply to the Senate inquiries regarding dredging permits:

No concession or grants to excavate the gold-bearing bed of the sea at or in the vicinity of Cape Nome, in Alaska, or in other Alaskan waters, have been made by the Secretary of War or any other official of the War Department. Numerous applications have been received by the War Department for permits to excavate in the bed of the ocean in the vicinity of Cape Nome. As there seems to be no legal reason why citizens of the United States should not have the same opportunity to prospect for gold and acquire mining rights, under the mining laws upon land under water as they have upon lands not under water, the Department determined as a general policy in the exercise of the discretion vested in the Chief of Engineers and Secretary of War by the statute to relieve all citizens applying from the obstacle interposed by the statute as long as their proposed operations do not interfere with navigation. All applications made under the statute have accordingly, so far as it has been possible to dispose of them, received favorable action. No application has been denied. Upon two permits have been granted. Upon a third papers have been prepared and were waiting the Secretary of War's signature at the time of the passage of your resolution. Three others were approved by the Chief of Engineers and were in the hands of the Judge-Advocate General for the preparation of the necessary papers. Eleven others are still in the office of the Chief of Engineers in process of examination upon the question whether they interfere with navigation. Four more just received are in the office of the Secretary of War. Unless otherwise directed by Congress the Secretary of War will deem it his duty in the exercise of the discretion vested in him by law to grant permits in these cases and upon all other similar applications by citizens of the United States.

The Senate has adopted the following amendment to the Alaska bill: "That, subject only to such general limitations as may be necessary to exempt navigation from artificial obstructions, all land and shoal water below mean high tide on the shores, bays and inlets of Behring Sea within the jurisdiction of the United States shall be subject to exploration for gold and other precious metals by citizens of the United States or persons who have legally declared their intentions to become such, under such reasonable rules and regulations as the miners in organized mining districts may have heretofore made or may hereafter make governing the temporary possession thereof for exploration and mining purposes until otherwise provided by law. Provided, further, that the rules and regulations established by the miners shall not be in conflict with the mining laws of the United States; and all permits heretofore granted authorizing any person or persons, corporation or company to excavate or mine under any of said waters are hereby revoked and declared null and void."

ARIZONA.

Cochise County.

Commonwealth Mining and Milling Company.—This company has enlarged its stamp mill at mine at Pearce 50%, giving a present capacity of 150 tons of ore daily. The ore contains gold and silver and has run as high as $100 per ton. R. A. F. Penrose is president of the company.

Mohave County.

Lucky Boy.—A 3 ft. shoot of rich gold ore is reported cut in this mine at Chloride.

CALIFORNIA.

Amador County.

(From Our Special Correspondent.)

Amador Queen No. 2.—The shaft at this mine, near Jackson, is being sunk from 12 to 15 ft. per week, with 4 men on a shift. It is now down 1,100 ft. and the contract calls for 130 ft. more.

Baliol.—This mine, 1 mile east from Sutter Creek, on the East belt of the Mother Lode, is now owned by a German syndicate, which has made the first payment. This mine has a record of 5,885 tons of low-grade ore at a cost of 60c. per ton for mining and milling, the ore having been taken from cuts and tunnels during April, 1897. The ore was handled by gravity. The new owners intend to make extensive improvements under the management of S. R. Porter, the old superintendent. The 500-ft. shaft is to be sunk and a new hoist erected. When the development work has progressed far enough the 40-stamp mill will be enlarged to 120 stamps.

Easton.—At this mine, the south extension of the Old Red Cloud, 2 miles northerly of Plymouth, owned by the Shenandoah Mining Company, of San Francisco, has been uncovered an apparently fine body of ore in the new incline at a depth of 375 ft. In the 200-ft. levels a large vein was found, but below the vein was lost, apparently. Crosscutting 8 ft. east from the incline exposed 5 ft. of ore that gives an average assay of $62.24 per ton, the sulphides being 2% with a value of $218.39 per ton. S. K. Thornton is superintendent.

Nevada County.

(From Our Special Correspondent.)

Comet Gold Mining Company.—This company, incorporated at Butte, Mont., with the following directors: R. H. Dawe, Joseph Annear, Joseph Broughton and William Shovell, all of Montana, and Thomas Andrew, of Grass Valley. The property is located on Osborn Hill, in the Grass Valley District.

North Star Mines Company.—This company has bought the Granite Hill Mine, 1 mile south from Grass Valley, for a price understood to be 25c. per share for the 100,000 shares of capital stock. The 2 claims have been worked to a depth of 600 ft. with levels at every 100 ft. The vein at some places is 2½ ft. wide and is said to carry 6% of high-grade sulphurets with spar. The plant is run by water power from Wolf Creek through a ¾-mile ditch.

Pioneer Reduction Works.—This company has decided to abandon the use of water power and instal an electric power plant. The works are ¾ of a mile south from Nevada City and comprise a chlorination plant, a matte furnace and a pulverizer run by a 40-H. P. engine.

Reward.—Pending the instalment of new machinery development work at this mine, 1 mile southwest from Nevada City, has suspended. At the annual meeting on April 5th, it will be decided whether the motive power will be changed from steam to water or electric power.

Rose Hill.—Four loads of ore milled for tributors taken from this mine, in South Grass Valley, is said to have returned $850 per load. The property is developed by tunnel, which cuts the ledge at 860 ft. and a 120-ft. shaft from which several drifts have been run.

Willow Valley Mining District.—It is reported that the Montana Mine, 3 miles south from Nevada City, has been sold to the Anglo-Swiss Bank, of San Francisco, and the Franklin Mine to Col. E. D. Boyle, of Nevada. The new owners of the Montana are to lay a pipe line 1½ miles long to supply water power. New machinery is to be instaled and the shaft is to be sunk 500 ft.

Placer County.

Santa Ysabel Gold Mining Company.—The committee appointed to report upon the plan for the reorganization states that it feels that the mine should not be abandoned, but that an effort should be made to find pay ore at greater depth.

The debts of the company, which must be provided for, amount to $65,000, of which $34,000 are notes payable, falling due in November and January next, besides certain current liabilities incurred since March 1st. In order to provide the necessary funds the committee recommends that a stockholders' meeting shall be called in Cheyenne, Wyo., to act upon the following proposition:

That the property be sold at private sale for an amount sufficient to pay its debts to a new company to be organized under Colorado laws with 150,000 shares of the par value of $5 each.

Stockholders to pay $1 per share, 20,000 shares to remain in the treasury of the new company; the new stock to be assessable.

The committee recommends that an underwriting subscription be made to take the shares of the new company not taken on the above terms within 60 days' notice, without commission. Mr. Charles Pfaff has consented to accept the presidency of the new company. One-half the new directors should be selected from stockholders on the present board. Operations should be resumed as soon as possible.

Three Stars.—Development work on this property, in the Ophir District, 7 miles west from Auburn, is pushed. The shafts are down 500, 524 and 725 ft. respectively and 30 men are employed under Supt. E. J. Kendall.

San Bernardino County.

(From Our Special Correspondent.)

Tecopa Smelting Company.—It is reported that this company is shipping from its property near Manvel an average of 2 tons of lead bullion to the smelter at Argentine, Kan. This bullion carries 100 oz. of silver and $15 in gold per ton.

Shasta County.

(From Our Special Correspondent.)

Afterthought and Peck.—These copper mines are said to have been bonded again by the Tarbet Syndicate, of Salt Lake City, for $100,000. The 35-ton smelter on the ground was erected by the Enrights. The bonders have filed notice for 3,000 in. of water from the North Cow Creek for generating electric power for mining, milling, &c. Work is to be resumed at once.

Black Spider.—Work at this mine, near Shasta, is progressing. The pump and hoist are working steadily and the water is under control. The shaft sunk by contract is down 100 ft. and drifts are to be run. It is intended to open the property.

National.—After treating 2,200 tons of tailings by the cyanide process at this mine, on Rich Gulch, near Buckeye Station, with satisfactory results, the plant has been closed down for repairs to start up again about May 1st. Heavy rains did some damage to the plant and washed away some of the tailings, but the return has been good.

Siskiyou County.

(From Our Special Correspondent.)

The steam borer or prospecting drill used by the Yreka Creek Dredging Company has been taken to the Klamath River for the purpose of prospecting that stream at the end of Buckeye Bar, where a Postelthwaite dredger is to be built. This method of prospecting has proved very successful.

Greenhorn Blue Gravel No. 1.—At this property, 1½ miles south of Yreka, the pumps and hoist have been taken out of the old shaft and will be put in a new shaft to be started soon. The men are now washing the gravel and tailings on the surface.

Greenhorn Blue Gravel No. 2.—On this property, south of Yreka, work will probably be resumed in a few days. To pump water out will

require some time, as the rainfall this season has been larger than usual.

Russell.—This mine, at Patterson Creek, is being worked with a full force of men. The river mines along the Klamath River are making preparations for re-opening claims, building wing-dams and putting in wheels. The freshets have cleaned the river of tailings and rock piles.

Trinity County.

(From Our Special Correspondent.)

Adele Mining Company.—This company is making arrangements to manufacture cement at Lewiston. Grading for a mill is in progress and the machinery is on the road. About 40 men will be employed. The cement has been thoroughly tested.

Tuolumne County.

(From Our Special Correspondent.)

Grizzly.—In the main shaft on the 700-ft. level of this mine, on the East Lode, 1 mile southeast of Carters, the old Grizzly vein, 13 ft. wide, is reported located. As soon as the station is completed a drift will be run. The 20-stamp mill is crushing steadily. The working force is to be increased. W. R. Hall is superintendent. On the location of William Connelly, on top of the ridge, north of the Grizzly, a 15-ft. vein of rich ore is said to have been discovered in an open cut, the only development on the property.

Mack.—Work at this mine, on the north side of Big Oak Flat, is confined to driving the 400-ft. west drift to connect with a drift from the Longfellow Mine. When completed the drift will give good ventilation to both mines and afford exit in accidents. Three 8-hour shifts are worked. C. L. Lang is superintendent.

Mazeppa.—At this mine, 1 mile south of Stent, a station has been cut at the No. 5 level and drifting has begun. The vein averages 12 ft. wide and the pay shoot shows for 250 ft.

Over.—Preparations are being made for sinking a new incline shaft on Bald Mountain. The shaft will tap the main shoot at sufficient depth to work the property to advantage. A gasoline hoist will be used.

Seminole.—At this group of mines, 1 mile south of Carters, a test run of 150 tons of ore is being made and on the result will depend future operations. The old mill is to be repaired.

COLORADO.

Clear Creek County.

(From Our Special Correspondent.)

Consolidated Stanley Mining Company.—This property has been examined by experts for a Montreal syndicate. The consideration is $1,500,000, and the first payment of $200,000 is to be made on April 3d. A forfeiture of $87,000 has been paid for the option and all arrangements are being made for taking the property. The reports as made have proven favorable, they showing a reserve of several million dollars worth of ore. The mine has 7 miles of underground workings. The Canadian people take possession on April 3d. The second payment will be made on September 3d. The new company will begin work at once on a concentrating mill below the shaft house with a capacity of 100 tons a day. The 50-ton mill on the opposite side of the creek will also be run. An electrical scheme is also to be considered in connection with the new work. Development will continue, the company now working 11 air drills in new work.

Massachusetts Mining Company.—The Freeland Extension Mine at Idaho Springs has closed down for a month because of a disagreement over affairs at the Boston end. It is understood that the differences have been settled and work is to resume. W. A. Haggott, the local representative, says that he can give no new information. Wide bodies of mineral are disclosed, and when closed down the mine was on a dividend basis.

Gilpin County.

(From Our Special Correspondent.)

Gold Coin Mines Company.—The machinery at California is in condition. The water is down to the 1,700 level and will be taken out to 2,223 ft. and the lower levels opened. An air compressor will be installed for work at Hidden Treasure and extensive developments are planned by Consulting Engineer B. B. Lawrence and Manager A. L. Collins.

O'Neill.—The Colorado-Ontario Gold Mining Company, through Manager H. C. Eastman, is going to sink 300 or 400 ft. deeper. A new hoist is to be installed. The shaft matter is all shipped and gives good returns.

Saratoga.—A new 80 H. P. boiler is being installed and a larger hoisting plant will be put up. Heavier shipments are made and the ore is of an improved grade. E. Le Neve Foster, Central City, is manager.

Mann.—A gasoline hoisting plant has been installed and a new shaft-house erected. Eastern and Denver parties are interested. J. H. Bourne, Central City, is manager.

Scandia.—The shaft now 430 ft. deep is to be sunk 300 ft. deeper. C. P. Collins, Bradford, Pa., is owner, with M. Weisbeck, Nevadaville, manager.

Tonawanda Leasing and Mining Company.—This company is working 60 men in its Perigo property and making daily shipments of about 80 tons. The ore is reported of better grade and some of the leasers are doing well. E. M. Messiter, Perigo, is manager.

Lake County.

(From Our Special Correspondent.)

Walter Atkins, a prospector, working the Small Hopes Claim, below Two-Bit Gulch, has opened a vein of fine graphite. The vein is not large, but is well defined and apparently right in the granite.

Grafton Mining Company.—This company has leased its ground to a Denver syndicate headed by E. J. Seeley. A new shaft is sinking to contact. New machinery has been ordered.

Golden Curry.—A. E. Stockton has opened up a strong gold vein on this Sugar Loaf property and has purchased machinery which will be taken out as soon as the roads are passable.

Resurrection Gold Mining Company.—There is still talk that this group has been sold to an English syndicate and that the transfer will soon be made. The management stoutly deny this statement, but good authority has it that the purchase price will be $2,500,000.

Royalty Gold Mining and Milling Company.—Capital stock, $1,250,000. The company owns 85½ acres of ground on Rock Hill, now leased to the Revenue Nos. 1 and 2 companies and to the Nil Desperandum. N. M. Estey is president and F. W. Owens secretary.

Rock Hill Gold Mining Company.—This company, operating through the Nil Desperandum claim at the 600-ft. level, is developing a contact which is very heavily mineralized.

Taylor Hill Gold Mining Company.—The recent strike in the Kentucky Boy is showing up a good ore body. The company owns 80 acres on the direct continuation of the main Leadville gold belt. A large plant of machinery is being put in.

Tiger.—This property, which has been tied up in litigation for some time, is to be leased and developed.

Two-Bit Gulch.—The excitement of the past 10 days has not died out entirely. I was correct in my statement that there was nothing to warrant the rush to this locality, 14 miles south of Leadville. Still there are mining men who think that a good vein will be opened by development. The rich assay that set the town wild was a concentrate from no one knows how much ore. So far the samples of crude ore found have not assayed over ¼ of an oz. to the ton. At the Great Western Claim the concentrate from the old shaft is being cleaned out and an endeavor will be made to get at the vein, said to have been opened in the lower workings years ago. There are about 200 people now on the ground prospecting, while all ground for 5 miles has been staked.

Teller County—Cripple Creek.

(From Our Special Correspondent.)

Acacia Gold Mining Company.—At the annual meeting in Cripple Creek the following directors were elected: J. E. Hundley, president; W. J. Chambers, vice-president and general manager; T. C. Dockstader, secretary; D. R. McArthur, treasurer, and A. B. Shilling. During the past year the property has shipped 1,357 tons of ore of the gross value of $59.95 per ton, amounting to $81,481. The company received royalties to the amount of $12,415, and the money in the treasury amounts to $9,990. The past year was the first for some years in which ore to amount to anything has been shipped. The company owns the Burns and Morning Star claims, on Bull Hill, both worked under lease.

John A. Logan.—The shaft is 1,200 ft. deep. It is rumored that a larger plant of machinery is to be put in and sinking resumed. It is understood that the owner, W. S. Stratton, has recently acquired the Favorite and the Nightingale near by.

Jack Pot Mining Company.—The lease held by the Creston, Ia., people will expire about April 15th and but little work is done except cleaning up. This lease has been running some time and has proved one of the most productive ever worked in this district. The Jack Pot Company is controlled by the Woods Investment Company, of Victor.

Lucky Guss.—This property has been started up again. It is understood that the lessees are Creston, Ia., men. The shaft is nearly 900 ft. deep and is equipped with a fine plant of machinery. The property is owned by an English company.

Standard Reduction and Smelting Company.—It has been decided to build the new chlorination mill in Colorado City. It is understood that the mill will be of 400 tons daily capacity and will cost about $750,000. It is also rumored that a smelter will be built in connection with the mill.

IDAHO.

Ada County.

Boise Basin Mining and Development Company.—This company has begun suit in the United States Court against G. A. Williams and the Boise City Bank. The case grows out of the action of Roberts in bonding a number of claims on Mare Creek to the company of which he is manager, and afterwards, it is alleged, relocating the claims and endeavoring to bond them to others.

Thunder Mountain Consolidated Gold Mines.—H. E. Taylor and W. Yates have bonded the property of the Caswell Brothers, 140 acres, on Thunder Mountain, and formed this company, which includes a number of Weiser men as stockholders. The ore is partly free milling and is said to have milled from $8.50 to $10 per ton. The Caswell Brothers worked the property last year by hydraulicking the surface debris. The extent of the vein is not known. The camp is 20 miles from Bear Valley

Blaine County.

Portland Company.—This company is preparing to blow in its smelter in Big Copper Basin, some 30 miles from Hailey. A. J. Crook is manager.

Cassia County.

Melcher.—A long tunnel is being driven at this mine. It is now in over 800 ft., but will have to go as much farther to cut the ore bodies. Machine drills are used.

Idaho County—Buffalo Hump District.

Big Buffalo Tunnel.—This tunnel is now in over 100 ft. An air compressor and drills are to be used. Three shifts are pushing work.

Boston-Buffalo-Idaho Company.—This concern is opening the St. Louis vein on which is a 3½ to 5 ft. pay shoot of concentrating gold ore. On the Mother Lode, another claim, a shaft is down 70 ft. About 20 men were at work all winter. J. P. Turner is superintendent and W. H. Young consulting engineer.

Vesuvius.—Clark & Sweeny, of Spokane, are developing this claim at Buffalo Hump. Three shallow shafts are in ore, and a wide pay shoot of free gold ore is reported opened.

Shoshone County.

Golden Chest Mining Company.—This New York concern recently acquired a controlling interest in 4 claims and the Idaho 20-stamp mill. The property adjoins claims already owned by the company. The price is not stated.

MICHIGAN.

Copper.

Union Copper Land and Mining Company.—At the annual meeting in Boston the existing board of directors was re-elected: H. F. Fay, John C. Watson, Stephen R. Dow, W. B. Mosman, Wm. R. Colby and R. R. Goodell. The company issued no annual report or financial statement.

President Fay said that although the company has a mining charter, the directors have always thought best to consider it as a land or development company. This timber land is constantly appreciating in value. By opening up the Union Company's land, the Copper Range Railroad increased its value. During the coming summer it is proposed to explore some of the lands.

(From Our Special Correspondent.)

Arnold Mining Company.—The fuel problem is rather serious at the Arnold, Humbolt, Ashbed and Meadow. The supply of coal is now exhausted, but there are large growths of timber on the locations which are being used until a supply of coal is received.

Arcadian Copper Company.—The new compressor built by the B. V. Nordberg Company, of Milwaukee, and installed at No. 4 shaft, is in commision, supplying power for 24 or 30 drills. A slight increase will be made in the working force at the mine.

Wolverine Mining Company.—Capt. Pollard, who has been with the Calumet & Hecla Mining Company many years, has accepted the offer of the Wolverine Company and will take charge April 1st as successor of Capt. Nicholas.

MINNESOTA.

(From Our Special Correspondent.)

Contractors for the ore dock of the Eastern Minnesota road to Superior are making rapid progress, and the dock will be ready before the opening of navigation. The company expects to handle not less than 2,000,000 tons this year, and is making all preparations. It will have all the ore from the Mahoning and Penobscot, at Hibbing, the Clark, a little east, the Sauntry and Commodore, at Virginia, and the Stevenson, west of Hibbing.

Such has been the increase in wages that the cost of stripping at Mesabi Range mines is now put at 45c. or more per yd. by hand work. Hundreds of unskilled Italian laborers are coming

in, and there promises to be plenty of labor for the season.

Iron—Mesabi Range.

(From Our Special Correspondent.)

American Mining Company.—This company will endeavor to make the entire deposit of its Sauntry and Alpena mines marketable by mixing the poorer ore above with the better below, and will deepen its cuts through the Alpena to get a high bank.

Commodore Mining Company.—This company at Virginia is installing a 1,500-gal. Prescott pump to handle all the water in the mine.

Dessau Mining Company.—This company, at Hibbing, has ordered machinery for extensive work on lands it has under lease south of and adjoining the townsite, where explorations were carried on all last summer with favorable results. A double drum hoisting plant, cylinders 14 by 18, with 5-ft. drums, has been ordered from Webster, Camp & Lane.

Lake Superior Consolidated Mines.—This company's mines, at Hibbing, are busy—5 in all. Burt is sending 270 tons daily to the Duluth furnace, and Hull is making a large stock. Stocks left over at 3 of the properties were large, and are being added to, while Sellers and Pillsbury are making big stocks. A new engine house at Pillsbury is completed, and a new shaft at Hull is almost ready for use.

Mahoning Ore and Steel Company.—This company has ordered a large standard gauge locomotive from the Baldwin shops, making 3 heavy engines at its mine. This company is preparing for an output of 1,000,000 tons, and will do a large amount of stripping early in the season.

McEwen.—This prospect, east of Virginia, on the ne of the sw of section 4, T. 58, R. 17, is to be opened by Kimberley & Jones, and may ship a little ore this year. There are 55 acres in the tract.

Penobscot Mining Company.—This company has completed excavation for its new Prescott pumping plant and the engines will be set up soon.

Sparta Iron Company.—This company is shipping several cars a day to the Ashland blast furnace, Ashland, Wis., for mixture with Gogebic soft ores.

Iron—Vermilion Range.

(From Our Special Correspondent.)

Chandler Iron Company.—This company is said to be exploring in section 7, T. 63, R. 10, some 10 miles northeast of Ely, the most easterly of all important explorations on this range. The same company is exploring in sections 32 and 34, T. 63, R. 12, close to Ely, and in section 25, T. 63, R. 13, north of any explorations in the immediate vicinity.

Oliver Iron Mining Company.—This company is sinking 3 new 3-compartment shafts in the foot at its Pioneer, Savoy and Sibley mines at Ely. The latter lies between the Zenith and Savoy. All of these shafts will be from 700 ft. down, and will be fitted with the best machinery possible. At the new Pioneer shaft the shaft frames will be of old steel rails, reinforced by angles, and holding in place a network of old wire ropes. It is expected that these 3 shafts will permit handling nearly 3,000 tons more ore daily than now. The 3 mines, of the company at Ely, Pioneer, Zenith and Savoy, are now hoisting about 2,000 tons a day and have stockpiles of about 230,000 tons. The Pioneer has its electric tram running underground and on stock piles. The current is handled at a voltage of 250. The tenth level is now being opened at a depth of 856 ft. An immense area has been opened above this, and a heavy tonnage is to be taken by the new steel shaft.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—Top-grade zinc ore was cut $1 per ton last week except for a couple of lots at Neck City and Stotts City, which were cut 50c., selling at $32 per ton. Lead sold all the week at $27.25 per 1,000 lbs. The steady decline in the price of ore is resented by producers and there is again talk of building smelters or exporting ore. It is possible that the big producing companies of the district may seek to control the market for high-grade ores, leaving the producers of low grades and those who did not wish to go into a combine tract to fight it out with the smelters. During the corresponding week last year top-grade zinc ore sold for $43 per ton and lead for $26 per 1,000 lbs. The lead sales were less than this year by 49,200 lbs., the zinc sales greater by 1,784,190 lbs. and the value greater by $85,034. For the first 12 weeks last year the sales were less than this year by 825,840 lbs. of zinc and 1,708,080 lbs. of lead, but the value was greater by $241,760. As compared with the previous week, the lead sales were greater by 31,560 lbs., but the zinc sales were less by 2,189,530 lbs. and the value was less by $31,705. Following is the turn-in by camps for the week ending March 24th.

	Zinc, lbs.	Lead, lbs.	Value.
Joplin	2,122,200	439,140	$42,739
Galena-Empire	1,917,990	295,660	32,947
Carterville	1,758,390	207,570	29,250
Webb City	333,010	38,840	5,720
Aurora	1,125,000	28,410	14 178
Oronogo	461,360	.....	6,629
Central City	134,700	2,580	1,956
Belleville	295,750	6,100	4,602
Duenweg	582,820	12,120	7,268
South Jackson	60,190	20,300	1,305
Carl Junction	256,720	.....	3,871
Neck City	388,870	.....	6,135
Stotts City	232,030	.....	3,585
Cave Springs	150,720	5,070	2,262
Granby	261,000	19,000	4,000
District total	10,081,750	1,074,730	$167,447
Total 12 weeks	115,721,500	12,388,500	$2,032,832

Mining Land Sales.—Dunlap & Gregory have sold the Cow Boy Mine, on the Keystone lease, at Roaring Springs, to Lawrence Whitcomb, trustee for the Devonshire Mining Company, of Boston, Mass., for $11,000. The Essex Mining Company, of Boston, has bought 80 acres of land 7 miles east of Joplin, on which the Keokuk Mining Company has a lease. The consideration was not stated, but the land was transferred to George M. Canterbury a few days before the sale for $9,000. U. Hendrichson and William H. Phelps have sold 40 acres of land west of the Granby land at Oronogo to Minneapolis parties for $12,000. Loy Brothers, of Aurora, have sold to an Iowa attorney named Loville a 1-3 interest in their Dewey Mine, on the land of the United Zinc Company at Aurora for $5,500. W. A. Corl has sold an ⅛ interest in a 1,000-acre lease west of Webb City to E. C. Gaddis for $5,000.

New Mining Companies.—The Boston-St. Louis Zinc Company has been incorporated with a capital stock of $1,200,000. The incorporators are George C. Campbell, R. L. Little and W. T. Mason of St. Louis. This is another case of overcapitalization. The Anglo-American Zinc Company of Arizona has filed evidence of incorporation with a capital stock of $1,250,000, of which $50,000 is to be employed in Missouri with the headquarters and offices of the company at Joplin. The North Empire Mining Company has been incorporated under the laws of New Jersey with a capital stock of $160,000, of which $25,000 will be employed in Missouri with the headquarters at Joplin. The Cumberland Zinc and Lead Mining Company, of Allegheny County, Md., has been incorporated with a capital of $16,000, of which $10,000, will be used in Missouri. The offices will be in Joplin.

A large number of fraudulent companies are being formed for the sole purpose of enriching promoters by the sale of stock, and all new companies offering stock whose capitalization is over $1,000,000 should be carefully investigated. There are a number of good dividend-paying zinc stocks selling in the East and there are also a number of companies offering stock who are keeping within the letter of the law in their transactions, but nevertheless knowingly swindling every investor who puts a dollar into their property.

New Mills.—The Rosebud Mining Company, at Aurora, is building a new mill on the Queen City land. The Shawmut Company on the Center Valley has a new mill running. The Hub Mining Company is building a new mill at Spurgeon, Mo. The Ishpeming Mining Company's new mill at Carl Junction has started. The new Vernon Mill on the Troup ground at Prosperity has started. The American Zinc, Lead and Smelting Company is arranging to build a new 600-ton mill on the Center Valley lease. The Jacksonville Mining Company at Joplin has started the new mill. The Shot Gun Mining Company, the Wheeling-Aurora Zinc Company and the Aurora Zinc Mining Company at Aurora are all building new mills.

MONTANA.

Carbon County.

(From Our Special Correspondent.)

Rocky Fork Coal Company.—Owing to a strike against the introduction of electric mining machines the property is closed. As the mines are the chief reliance of the Northern Pacific Railway in this State for fuel the railway is skirmishing elsewhere for coal. The miners are becoming troublesome and several incendiary fires in the town of Red Lodge are credited to them.

Rocky Fork Coal Company.—At this company's coal mines at Red Lodge last week the miners went out on a strike because of a notice given by the company of a new schedule of wages. The miners have received $3.25 a day, and the new mining rate is 42c. per ton with machines. J. M. Fox is manager of the company.

Jefferson County.

(From Our Special Correspondent.)

Basin and Bay State Company.—There is a reasonable probability that the differences between the Glass Brothers and the Eastern stockholders will be adjusted and the works started under the former management. F. C. Berendes, the receiver, has gone East to confer with interest there with that object in view. As the plant is considered to represent the most modern ideas in copper smelting and has cost something more than $1,000,000, it is hoped something will be done.

Bonanza Chief.—Mr. Frank Esler, who has this property under lease, has also leased the old Overland Stamp Mill and will have a double-deck Wilfley table put in. The mill will be running by April 1st on ore from the second-class dump estimated at about 4,000 tons with a gold value, it is said, of about $8.

Lewis & Clarke County.

Bonanza.—This mine at Montana City, which has had a varied history, is now being worked by Frank Esler, of Helena. Mr. Esler, instead of shipping the ore to a smelter, as previous operators did, will concentrate the ore and ship the concentrates. A 30-stamp mill is on the ground and concentrating tables are being put in.

Jasper.—A strike of lead ore of good size is reported at this mine, just within the city limits of Helena.

Silver Bow County.

Homestake.—This mine in Park Canyon, east of Butte, was purchased recently by the Montana Ore Purchasing Company from Con Sullivan and H. Nickel, of Butte, and the Glass Brothers, of Basin, for a reported price of $100,000.

Montana Ore Purchasing Company.—This company has begun a suit for $1,600,000 damages against the Boston & Montana and Butte & Boston mining companies, E. Rollins Morse, Jesse Lewisohn, Leonard Lewisohn, G. M. Hyams, C. S. Batterman, A. S. Bigelow and John F. Forbis, receiver of the old Butte & Boston Company. The claim is based on allegations of a conspiracy on the part of the defendants to ruin the Montana Ore Purchasing Company financially, in pursuit of which, it is alleged, 2 suits, known as the original Pennsylvania cases, were brought in the United States Court in March, 1897, and injunctions were obtained by which the Montana Ore Purchasing Company was enjoined from working certain portions of the Rarus and Johnstown veins. The injunctions remained in force for 2 years and were then dismissed. The defendants had given two injunction bonds of $100,000 each, but the Heinze people claim to have suffered damages to the amount of $1,400,000 in excess of the penalty provided in the bond. They claim also that before the original suit was brought the defendants falsely and maliciously circulated reports in New York and London intended to injure the Montana Ore Purchasing Company.

Teton County.

(From Our Special Correspondent.)

Esler Mining and Concentrating Company.—This company has organized to build a concentrator in the Swift Current Mining District in the opened part of the Blackfeet Reservation. The company has a contract to mill 400,000 tons of copper ore, for which it is to receive $6 per ton. The concentrator will be about 50 miles northwest of Blackfoot, a station on the Great Northern Railroad. The company is composed of Helena men: A. M. Esler, president; F. W. Rossberg, vice-president; Walter Shobe, secretary and treasurer. Mr. Esler built the first concentrating mill in the Cœur d'Alene's on a somewhat similar arrangement with the then owners of the Bunker Hill & Sullivan.

PENNSYLVANIA.

Anthracite Coal.

Accidents in Anthracite Mines.—James Roderick, of the Bureau of Mines and Mining, in his annual report gives some interesting statistics about accidents. He says that the anthracite law of the State is the best law regulating coal mining in the world, and that the great bulk of the accidents now are due to the carelessness of the individual miner. The average statistics for 3 periods of 10 years are:

Years.	Employees	Tons produced yearly.	Tons produced per employee.	Tons produced per life lost.
1870-79	50,052	18,592,484	331	86,436
1880-89	97,157	33,705,978	346	108,387
1890-99	136,580	47,024,251	344	109,232

SOUTH DAKOTA.

Lawrence County.

(From Our Special Correspondent.)

New Cyanide Plants.—Machinery and tanks have been ordered for a 20-ton cyanide plant to be erected by James Halloran, of Lead, at his Golden Crown Mine, in North Lead District. Machinery has also been purchased for a 50-ton cyanide plant to be erected by Jack Gray, of Terraville; D. A. McPherson, W. L. McLaughlin and John Blatchford, of Deadwood, owners of the Wasp No. 2, Minnie, Flat Iron, Danielson and Alma Fractions, in Yellow Creek District, 3 miles southeast of Deadwood. There are 130 acres in the group, and a large amount of high grade ore has been shipped. The plant will be in operation by June 1st.

Cleopatra Mining Company.—R. B. Hughes, of Spearfish, general manager, with H. R. Bart-

lett, president of the Titanic Company, and W. E. Sharp, both of Spearfish, has returned to the Black Hills from an extensive trip through the Western mining States to inspect cyanide plants. The Cleopatra Company has began a building, and the Titanic Company has a shaft nearly down to quartzite on the south end of a tract of 800 acres.

Golden Crown.—Ground is broken for a 25-ton cyanide plant at this mine, in North Lead District, and machinery has been ordered from Chicago. The owners are: James Halloran and Mike McAllen, of Lead.

Portland Mining Company.—This company is shipping 75 tons of ore daily to the cyanide plant and the smelter in Deadwood, principally from the upper contact. Development work goes on at the Decorah Mine, bonded by the company.

UTAH.

(From Our Special Correspondent.)

Ore Supply.—Notwithstanding the large shipments out of the State, the ore supply at local smelters was never greater at the end of March and never was a larger tonnage treated. The American Smelting and Refining Company's furnaces are treating at the rate of over 20,000 tons of ore a month.

Bingham Copper and Gold Smelter.—On March 24th the contract for the pyritic smelter was awarded to the Gillette-Herzog Manufacturing Company. The construction is to be complete in 5 months. Messrs. O. E. Weller and O. P. Posey are still here and the contract was let under their direction. The site is on Jordan River, a part of the ground owned by the United States Mining Company. W. A. Nutting will have charge of construction.

A Probable Zinc Plant.—Mr. Walter C. Brace, who for 10 years has been identified with Colorado mining and smelting, is completing negotiations for the establishing of a zinc plant near Salt Lake. The Sadler process is to be used. Utah abounds in zinc ore, and heretofore it has been a detriment to the Park City and Bingham mines, as well as to the Horn Silver. It is said a market is to be made for products which have been non-marketable.

Charles Butters & Company, Limited.—The Butters Experimental Treatment Laboratory in Salt Lake, which has been closed for 18 months, is to open for business on April 1st. E. S. Leaver will be in charge.

Juab County.

(From Our Special Correspondent.)

Tintic Shipments.—For the week of March 24th the shipments from the railroad points of the district aggregated 90 cars of ore and 2 cars of concentrates, contributed as follows: Centennial-Eureka, 29 cars; Mammoth, 10 cars ore, 2 cars concentrates; Grand Central, 9 cars; Swansea, 9 cars; Gemini, 5 cars; Humbug and Uncle Sam, 5 cars; Ajax, 4 cars; South Swansea, 4 cars; Bullion Beck, 4 cars; Godiva, 3 cars; May Day, 2 cars; Tintic Iron, 2 cars; Carissa, North Star and West Morning Glory, each 1 car.

Ajax.—Shaft is to be put deeper and exploration advanced below 700 level. Over 100 tons No. 1 copper rock marketed the past week, about the top grade for the district.

May Day.—On March 22d the ore body was cut on 100 level, looking as favorably as on 50 level, from which current shipments are made. Another rich shoot, carrying high gold values, is struck at a point not looked for. John A. Hunt is manager.

Salt Lake County.

(From Our Special Correspondent.)

Boston Consolidated.—A flow of water is tapped in the tunnel, which may prove of value in the event of the company building the proposed concentrating plant. Otherwise exploration progresses as usual.

Utah Consolidated.—The past week 6 carloads of rich lead-silver ore were marketed in Salt Lake. It comes from a cross fissure which cuts the big copper ledge and is explored enough to prove it of considerable worth. The copper smelter is doing better. Developments on the horizon of No. 7 tunnel are fully equal to Nos. 6 and 5.

Summit County.

(From Our Special Correspondent.)

Daly-West.—A profit-paying ore shoot is cut above 1,400 level. Most of the good things predicted by Daly-West champions are coming true and Superintendent Kirby starts in under bright auspices.

Park City Shipments.—In the week of March 24th the total smelter products sent forward was 2,968,835, made up as follows: Silver King, crude, 1,065,885 lbs.; Daly-West, crude, 757,490 lbs.; concentrates, 732,540 lbs; Anchor, concentrates, 412,920 lbs.

Tooele County.

Daisy.—The special stockholders' meeting on March 23d failed to accomplish anything tangible. F. W. Moger threatened to appy for a receiver. The Bank of Commerce, which holds company paper for $15,000, a part of the trust deed for $34,000, claims several parties are willing to pay over $15,000 on a forced sale. As there appears no margin of profit in milling the ore, no one will pay more than the value of the surface plant.

Northern Light.—The news is given out of the opening of more shipping ore, as well as a large tonnage of milling material.

Star.—At special stockholders' meeting on March 20th, a new directorate was elected: Messrs. I. Barton, C. H. Plant, F. W. Brockmeyer, S. Wilson and M. Levy. Total debt is over $7,000. Some of the richest cyanide product marketed in Salt Lake came from the Star mill and the new control believe the property can be made a winner.

VERMONT.

Slate.

Snowden Slate Company.—Increased operations are planned on this company's property. The president is Henry Green, and the general manager and treasurer, C. Swartsweller.

VIRGINIA.

Slate.

Vermont Slate Syndicate.—The quarries are located at Fair Haven and Poultney. Robert Morris has been succeeded as manager by William Jones, the general superintendent.

WASHINGTON.

Okanogan County.

(From Our Special Correspondent.)

Black Bear-War Eagle.—At Loomis the shaft is down 250 ft., drifting both ways to catch parallel veins. Tenders are asked for hauling ore from mine to mill pending the completion of the bucket trains.

Bull Frog.—This company, 6 miles north of Loomis, has run a drift from bottom of 130 ft. through 5 ore bodies.

Snohomish County.

(From Our Special Correspondent.)

Copper Queen.—This group is on the Skykomish River, 5 miles from Index. Three hundred and fifty feet of tunnels have been run. The ore is an arsenical iron, and gold is the predominating value. During last summer the Great Northern Railroad made a survey for a 14-mile branch line from Index.

Ethel.—At this group of 7 claims, on the west side of the North Skykomish River, 5 miles from Index, 230 ft. from the entrance and at a depth of 400 ft., tunnel No. 1 has crosscut the larger of 2 veins, and 2 shifts are drifting each way on 2 or 3 ft. of bornite and copper glance. Two blind leads of low-grade ore were crossed in No. 1 tunnel. Three hundred and fifty feet above No. 1 another crosscut is now in 130 ft. Twenty-two men are busy.

Haber.—Application has been made for patents for 11 claims of this group on Troublesome Creek, just over the divide from Monte Cristo. This property is owned by stockholders of the Great Northern Railroad, who purchased it 2 years ago and who have had from 20 to 50 men employed. Seven different tunnels, aggregating about 1,200 ft., have been driven.

Index-Independent.—This property includes 3 claims on one large vein. The outcrop shows some fine bornite, in one place from 10 to 16 in. for a distance of 20 ft. on the foot wall. The pay ore on the hanging wall is copper glance and gray copper; 350 ft. of tunnel have been driven. Since May 1st 10 to 20 men have been employed. The claim is a mile from the railroad.

John D.—Three tunnels with an aggregate length of 400 ft. and a 60-ft. winze is the underground development on this group of 7 claims adjoining the Ethel and traversed by the same veins. A contract has been let for 700 ft. on the working tunnel to start at the base of the mountain and tap the main vein at a depth of 1,000 ft. A 5-drill compressor plant, operated by water power, is to be installed.

Lost Creek.—This company is developing 2 groups of claims, and since July has employed 20 men at the Ethel, on Iron Mountain, at the head of Lost Creek, about 8 miles above Index.

FOREIGN MINING NEWS.

AUSTRALASIA.

New Zealand.

The Mines Department reports the quantity of gold exported from the Colony for the year ending December 31st as below, in ounces:

	1898.	1899.	Increase.
Gold	280,175	389,558	109,383
Silver	293,851	349,858	56,007

At the value stated by the Department, the gold in 1899 was equal to 356,271 oz. fine, or $7,364,109. The value of the silver was $196,068, or 56c. per oz.

Queensland.

Mount Morgan Gold Mining Company.—During the month of February 19,093 tons of ore were crushed and chlorinated, the saving being 13,396 oz. gold; an average of 0.7 oz. to the ton.

Tasmania.

Mount Lyell Mining Company.—This company reports for the four weeks ending March 7th, 23,752 tons ore smelted. The result was matte containing 723 tons copper, 61,653 oz. silver and 2,036 oz. gold. The average return was 3.05% copper, 2.59 oz. silver and 0.08 oz. gold to the ton.

Western Australia—Kalgoorlie District.

(From Our Special Correspondent.)

The Perth Mint is not a general favorite with the mines on the fields. The majority of the mines claim to have better treatment in London and Melbourne.

Associated Mines.—According to the statement of the Chairman of Directors, this "is not a mine in the ordinary sense of the word; it is simply a gold factory." This mine has had its ups and downs, not only in the stock markets, but in its output, from 12,000 oz. to 2,500 oz. for December, with the new sulphide plant at work, which cost, so the chairman stated, £300,000. The new plant, during December, treated 2,150 tons for 1,275 oz., an average of over ½ oz. per ton. The impression among outsiders was the crushing would be about 2 oz. This mine boasts of a man known as "Comptroller of Finance," in addition to the ordinary staff.

Back Blocks.—The Sons of Gwalia, and Westralia Mount Morgan are the two principal mines. Both are making additions to their plants. Some of the most promising concerns, which started to crush with 10, 20, or even more stamps, 1 and 2 oz. ore, have got into fractions of an oz., and the owners are not so sanguine as a few months ago.

Boulder Main Reef.—This mine is sinking its shaft from the 400 to the 700 ft. and intends to open the different levels at the same time. The new plant, with pans and filter presses, is working well, and the extraction is better than expected. From the ore district from the furnace, an average of 94% has been obtained, while from the tailings the average extraction has been 91%, without agitation.

Lake View Consols.—The output dropped from 30,000 oz. per month, for 6 months, to 12,000 oz., 6,000 of which was from smelting ore; the oxidized ores are about exhausted. The sulphide plant, erected to treat about 300 tons per day, treats about 2,000 tons per month of 2 oz. ore. An effort is being made to use the 50-stamp battery for the sulphide ores by amalgamation and concentration, and treat the tailings and slimes by leaching the filter-presses with bromo-cyanide.

CANADA.

British Columbia—West Kootenay District.

Rossland Ore Shipments.—The shipments of ore from Rossland mines for the first 3 months of the current year amount to 32,600 tons gross valued at $575,000.

Contract System.—No definite settlement has yet been arrived at between the mine operators and the miners' union of Rowland. A delegate recently went from Rowland to Butte on behalf of the union to investigate the working of the contract system there. He has since returned and reported, but no definite announcement has been made, and it is believed that none will be made until after the elections, which take place in June.

Le Roi.—The contract for a 700-H. P. Corliss hoist to be driven by steam has been let to Fraser & Chalmers, London and Chicago.

Ontario—Lake of the Woods District.

(From Our Special Correspondent.)

A Chamber of Mines with headquarters at Winnipeg has been organized. The movement originated with Mr. L. H. Malcolm, lately from Johannesburg, South Africa. L. H. Malcolm is secretary.

Mikado.—Gold bricks of the value of $14,000 have lately reached Rat Portage, the result of 2 weeks work. It appears that the mine struck some rich ore lately, as $14,000 has been about the average monthly output.

Among the new propositions upon which development work has begun during the past 6 months are the Wendigo on Witch Bay, the Gold Estates on Denmark Lake, the Gold Banner on Sturgeon Lake and the Nino, northeast of Sturgeon Lake and near Deer or Caribou Lake. Each is showing up well.

SOUTH AMERICA.

Ecuador.

Playa de Oro Mining Company.—The following circular appeared recently, under date New York, March 10th, addressed to the stockholders of the Playa de Oro Mining Company: "We, the undersigned, stockholders of this company, respectfully request you to give your proxies for the ensuing annual meeting of the stockholders to be held May 1st, 1900, at Versailles, Ky., to Mr. O. S. Gage, and other parties to be selected

by him. We are convinced of the great value of the property, and the fact that the stock has been for a long time, and is, practically unmarketable, renders it of the utmost importance that this condition should be changed at once. We therefore are desirous of having as many representatives on the board as possible."

The names appended to the circular were: Leonard L. Wetmore, Dwight C. Lefferts, David H. Townley, Arthur N. Bingham, Matthew C. Fleming, John J. Houghton, Jos. Hellen, Edgar M. Hoagland, Albert Dumarest, Charles L. Kingsley, George Du Relle and Henry C. Ross.

The following circular also appeared, dated New York, March 20th, and also addressed to the stockholders of the Playa de Oro Mining Company: "We have no desire to enter into a controversy with the management of the company, but as statements made in their circular of the 19th inst. might lead you to infer that we fully indorse the present management, we desire to correct this impression. A careful reading of our circular letter of the 10th inst. will show that we merely stated our conclusions regarding the value of the property and the plant, and its present condition, while carefully refraining from expressing any opinion whatever concerning the present management. The mere fact that both our names appear on the call for proxies for Mr. Gage, of course, shows that we believe it to be for the best interests of the stockholders that he should be represented on the board by as many directors as possible."

This was signed by Dwight C. Lefferts and David H Townley. Appended to this was a statement signed by Mr. Otis S. Gage, as follows: "It is with satisfaction that I notice that the present management of the company hold me in no wise responsible for its present financial condition. When I resigned the vice-presidency of the company in 1896, the company had ample funds to put the property into immediate production, and I know of no good reason why this was not done. The hostility of the board to me since that time can be accounted for by reference to my pamphlet of January 2d, 1900, which has not up to the present been answered by them. My only desire has been, and now is, to have the mines put into production, so that the stockholders, many of whom are personal friends, can receive some benefit from their investment. By reference to the various circulars issued by the company during the past four years, and those that I have issued myself, I believe the fact will be established that I have been working absolutely in the interest of all stockholders."

COAL TRADE REVIEW.

New York. Mar. 30.

Anthracite.

Warmer weather sees a lessening demand for anthracite coal in all consuming territories. Spring is close at hand and buyers will not take any more than enough to cover immediate wants. March has proved a much better coal-burning month than most men in the trade expected to see, and as a result stocks in the West and at inland points East were drawn on heavily. In Lake Superior territory the outlook now is that docks will be nearly cleaned up when navigation opens late in April. In Chicago territory also, the supplies on dock will be light, and the conditions are good for spring trade opening in satisfactory style. At inland points East reports that come in show that the supplies of coal on hand are nearly if not quite as low as at this time last year. At Boston the market is quiet; dealers talk of plenty of coal to meet all demands, but this talk is partly influenced by a disinclination to buy before the tax assessor makes his round on May 1st.

As a whole, however, the market is dull. No serious breaks in prices are reported. The companies are restricting output severely and are expected to hold together better than ever before. Just how well they will succeed cannot be told yet—in fact, not before August. The trade for the next few months is likely to be rather featureless.

The possibilities of labor troubles at the collieries with the coming of warm weather are not considered threatening. The movement, if started, will be really a struggle for recognition by the leaders of the labor organizations. The miners have not shown any great interest in these organizations, and until the leaders feel surer of a strong following strikes are not likely to occur. Several strikes within the past year resulted in little but serious losses in wages to the miners.

We quote free-burning anthracite f. o. b. New York as follows: Broken, $3@$3.20; egg, $3.30@$3.45; stove, $3.70@$3.90; nut, $3.70@$3.90.

The demand for steam sizes, owing to the high prices for soft coal, and especially to the heavy restricions on output, continues very active. This demand will probably last several months yet.

Notes of the Week.

The Philadelphia & Reading Coal and Iron Company makes the following statement for February and the eight months of the fiscal year from July 1st to February 28th:

	February.	Year.
Earnings	$1,696,294	$20,578,389
Expenses.....	1,705,078	18,790,176
Profit or Loss....	L. $8,784	P. $1,788,213

For the eight months there was an increase of $3,942,044 in earnings; of $3,162,435 in expenses; and of $779,609 in net earnings.

Bituminous.

In the seaboard soft coal trade consumers are beginning to realize conditions and producers are now besieged with requests for coal contracts for the coming year. It is thought that every producer of standard coal is under this pressure, and it is stated that no operator is considering prices lower than those arranged by the association of operators. In many cases producers could easily secure higher figures, but as a rule they are taking a conservative course and making the association figures the basis of contracts. Most producers are limiting their deliveries to old customers and in cases refusing to supply these with all the coal wanted, naming definite fixed amounts which the customers may call for during the coming year. This attitude of the producers is due not only to the great demand for coal, but to other considerations. Labor troubles are threatened in one or two fields and there are the great questions of transportation to seaboard and car supply at the collieries. Certain developments of the past week indicate that the main line roads are alive to the situation; whether they will be able to help things through is questionable, though there are indications that to a certain extent the roads will make their greatest efforts to get coal forwarded.

The Pennsylvania Railroad, which has been suspected of having a controlling interest in the Norfolk & Western, is thought to be taking steps to benefit by that control. It is stated that 2 important conracts with Transatlantic steamship lines at New York, which have been taken by the Pocahontas Coal Company heretofore, have this year been awarded to the Berwind-White Company. This, of course, means a great curtailment of Pocahontas shipments to New York Harbor. Officials of the Pocahontas Company at New York deny the report that it has been decided to stop such shipments altogether, though acknowledging that the matter may come under consideration.

Consumers in the far East are beginning to make contracts, convinced that the present prices are to last. Along the Sound consumers will contract for all the producers will allow. New York Harbor trade is of good volume and contracts are closed on the new prices. All rail contracts continue to be made. Shipments to the various consuming territories this week have been made entirely on a basis of closing the year's business at old prices. Nearly all the New York Harbor ports are shipping all the coal their facilities will permit, and shipments from the lower ports are correspondingly curtailed.

Transportation from mines to tide is better, though slow. Car supply is poor and this week is under 50% of what is desired. In the coastwise vessel market vessels are in good supply and ocean freight rates are low. Philadelphia to Boston, $1; to Providence, New Bedford and the Sound, 85c.

Standard coals are quoted at $2.90@$3 at New York Harbor ports.

Birmingham, Ala. March 26.

(From Our Special Correspondent.)

There is no cessation of activity in the coal mart in Alabama and the mines are working hard and are enjoying the largest outputs in their history. There is no trouble being experienced in disposing of all the product that can be mined, and the mines are working with a steady vim and the output increases. New mines are beginning to show results and it will not be long before some of the larger new mines will have a big output, namely the Warner Mines, belonging to the Republic Iron and Steel Company, which are to have, when in full operation, an output of about 2,500 tons.

There was quite a lot of talk in this district last week over a reported sale of 2,000,000 tons of Alabama coal to a syndicate for use in Europe. The work was sent out of New Orleans, it being reported that the coal was to be reloaded at that point. Two years' time for delivery was reported on the order. Local coal men and railroad officials could not see it possible for the story to be true, inasmuch as the domestic demand is now about as great as the operators here can handle.

The coke ovens are using great quantities of coal, the demand for coke being exceedingly great. Many new coke ovens have been built in the last twelve months and 200 more are being projected. The Sloss-Sheffield Steel and Iron Company recently completed 87 at New Found, in Jefferson County, and 50 at Blossburg, also in this county; 100 more are to be built in the city and at Brookside.

A good price is being obtained still for the product. In the announcement of the deal wherein 2,000,000 tons of Alabama coal was sold, the price given was 75c. at the mouth of the mines, and 75c. for delivery per ton to New Orleans from the mines. It is stated by operators here that it costs more to mine a ton of coal than 75c. and that the rate on a ton from the Birmingham district to New Orleans was something like $1.50 per ton. The miners are getting from 55 to 57c. per ton for digging the coal alone.

Chicago. March 27.

Anthracite Coal.—Anthracite coal is in moderate demand, the buying for the present being in small lots. Spring-like weather prevails and this has had a tendency to decrease sales. However, so far March has shown up very well. There has been a large decrease in receipts of hard coal by rail for the first three months of this year as compared with the same period of 1899. Prices continue fairly steady and are $5.75 for egg an stove anl $6 for chestnut.

Bituminous Coal.—Soft coal has been in better demand during the week, the buying being for larger lots and the calls more numerous. This is due to the fact that April 1st brings with it increased prices, due to the advance in mining scale. Prices are firm.

Cleveland, O. March 29.

(From Our Special Correspondent.)

The coal transportation market continues in a state of apparent tranquility, but evidences multiply that under the surface a different state of things exists. The market is going to present some rather perplexing problems. Reports received at the offices of the operating companies here indicate that the coal supply at the head of the Lakes is getting worse and worse. Instead of a simple scarcity of slack and other soft coal, there is none of any grade at all. The coal companies are dependent for the supply of their regular customers upon the few all-rail shipments which are coming in. Considerable coal must be shipped by rail to the head of the Lakes during the month of April, and if navigation does not open as early as has been expected, of which there is a strong probability, the rail receipts will amount to considerable. The shipments by boat will, however, be extremely heavy. Shippers from the Ohio Ditsrict will load all the coal possible this month, and with the docks at the Upper Lake ports in good condition there should be nothing to retard a free movement of fuel. Tonnage for coal carrying is in great demand; but the vessel owners and the shippers are still far apart on the matter of rates. Some owners are demanding 70c. to Milwaukee, others 75c. The shippers, on the other hand, think that they should not be asked to pay more than 60c., at which figure season contracts have been made for Manitowoc and Sheboygan. There is a strong demand also for boats for the first trip to the head of Lake Superior. A number of shippers have paid 60c. for this trip and all the vesselmen who have not chartered their craft are now holding for that figure. The failure of the second attempt on the part of representatives of the Ohio coal carrying roads to fix a rate is retarding things all along the line. In the first place, many of the roads will handle none of the Lake coal just now. Then the coal shippers, until the rate is fixed, can neither make contracts with consumers at the head of the Lakes nor ship coal to the Lakes to load the boats now waiting for cargoes. Finally, the vessel owners who have coal boats can do no business in the way of making extensive coal contracts with the shippers until the latter have made their contracts with consumers. One thing is known, and that is that the coal roads intend to ask a pretty sharp advance on the coal rate this year, 20 or 25c. in excess of the rate last season. Following the agreement upon a wage scale for soft coal handlers at Lake Erie docks, noted in this correspondence last week, the anthracite coal shippers are also in conference with the representatives of the longshoremen's union arranging for the establishment of a uniform rate. In the past each dock paid its own rate of wages regardless of what the others paid.

The operators of the Massillon District held a meeting in Cleveland a few days since and decided to grant the miners employed in their mines an advance of 20c. It was further decided to advance the price of coal to consumers 25c. per ton. The advance goes into effect April 1st. The commissioners of Cuyahoga County, in which Cleveland is located, opened bids a few days since for coal for the county buildings for the ensuing year. The lowest bid for run-of-mine was $1.98 per ton, and for Pittsburg nut coal $1.95. The last contract made by the commissioners was for $1.65 for run-of-mine and $1.47 for Pittsburg nut.

Pittsburg. March 28.

(From Our Special Correspondent.)

Coal.—The details of the new mining scale have been agreed upon this week, and the cost of mining for the year beginnig April 1st is now known and the two coal combinations are figuring on prices. No announcement of new prices has yet been made, but the amount of the advance will be known before the end of the

week. The new rate, it is said, will be at least 25c. a ton higher than present prices. Offers of coal for foreign shipments are being received and some additional contracts are likely to be made. All the mines in this district are being operated to their fullest capacity. Less than 1,000,000 bus. of coal were shipped to Southern ports during the week. There are plenty of empty coal boats and barges to keep the mines busy until more empties are returned from the South.

Connellsville Coke.—The demand continues to be heavy and prices are firm. Furnace coke is quoted at $4@$4.25 a ton and $4.50 is the minimum rate for foundry coke. The production fell off slightly last week, but the shipments were greater. Of the 20,093 ovens in the region this week, 554 are idle. The production last week was 215,754 tons. The shipments aggregated 12,281 cars distributed as follows: To Pittsburg and river tipples, 4,900 cars; to points west of Pittsburg, 5,597 cars; to point east of Connellsville, 1,754 cars. This is an increase of 529 cars as compared with the shipments of the previous week.

SLATE TRADE REVIEW.

New York. Mar. 30.

The list of prices per square for No. 1 slate, standard brand, f. o. b. at quarries in carload lots, is given below:

Prices of Roofing Slate.

Size, inches	Monson or Brownville.	Bangor.	Bangor Ribbon.	Alb'n. or Jackson Bangor.	Lehigh.	Peach Bottom.	Sea Gr'n.	Unfad'g Green.	Red.
	$	$	$	$	$	$	$	$	$
24 x 14	6.10	3.50	3.00	3.25	3.10	5.10	3.15	..	....
24 x 12	6.60	3.50	3.00	3.25	3.10	5.25	3.15	3.75	.....
22 x 12	6.60	3.50	3.25	3.50	3 25	5.25	3.15	3.75	.....
22 x 11	6.50	3.75	3.25	3.50	3.25	5.25	3.15	4.00	.....
20 x 12	6 90	3.75	.....	3 50	3.25	5.25	3.15	3.75	.....
20 x 11	6.80	.....	.....	3.75	3.50	5.25	3.15	....	....
20 x 10	6.80	4.50	3.50	3.75	3.50	5.35	3.15	4 25	11.00
18 x 12	6.80	3.75	.....	3.50	3.25	5.25	3.15	3.50	.....
18 x 11	7.00	....	....	....	....	...	3.15	3.75	....
18 x 10	7.20	4.50	3.50	3.75	3.50	5.35	3.15	4.00	11.00
18 x 9	7.10	4.50	3.50	3.75	3.50	5.35	3 15	4 25	11.00
16 x 12	6.80	3.75	....	3.50	3.50	.....	2.95	3.50	....
16 x 10	7.10	4.25	3.50	3.75	3.50	5 25	2.95	4.00	11.00
16 x 9	7.00	4.25	.....	3.75	....	5.35	2.95	4.25	11.00
16 x 8	7.20	4 50	3.50	3.75	3.10	5.35	2.95	4 25	11.00
14 x 10	6 60	3.75	3.25	3.25	....	5 25	2.85	3.75	11.00
14 x 9	6.50	....	....	....	....	....	2.85	3 75	11.00
14 x 8	6 60	3.75	3.25	3.25	3.10	5.10	2.85	4.25	11.00
14 x 7	6.40	3.75	3.25	3.25	3.10	5.10	2.60	4.25	11.00
12 x 10	5.80	....	....	....	....	...	2.60	3.25	.....
12 x 9	5.60	....	....	....	....	....	2.60	3.25	.....
12 x 8	5.50	3.50	.....	3.00	2.80	4 85	2.60	3.50	9.50
12 x 7	5.00[a]	3.25	.....	3.00	2.80	4.85	2.50	3.50	9.50
12 x 6	4.80	3.25	....	3 00	2.80	4.75	2.50	3 50	9.50

[a] square of slate is 100 sq ft. as laid on the roof.

In Brownville and Monson delivery quotations can be had somewhat lower than above, which is also true of other brands. No. 1 Bangor are 50c. extra when full 3-16 in.

The demand for roofing slate increases as the quarries resume work, and the spring trade promises to be a good one this year. Prices are unchanged, though further cutting in old quarters is heard. The movement from Slatington and Walnutport, Pa., for the week ending March 15th, amounted to 3,234 squares roofing slate, 117 cases school slates, and 133 crates blackboards. The shipments thus far this year are 20,066 squares roofing, 4,233 cases school slates, and 2,936 crates blackboards. Exports are limited, owing to the continued high freight rates.

IRON MARKET REVIEW.

NEW YORK, March 30, 1900.

Pig Iron Production and Furnaces in Blast.

Fuel used	Week ending Mar. 31, 1899. F'ces.	Tons.	Week ending Mar. 30, 1900. F'ces.	Tons.	From Jan., '99. Tons.	From Jan., '00. Tons.
An'racite & Coke.	175	224,959	264	286,350	2,977,709	3,671,377
Charcoal.	16	4,625	29	7,175	66,517	98,347
Totals..	191	229,575	293	293,525	3,044,226	3,769,724

The iron market, to all outward apearance, has been very dull during the week. Few large transactions are noted, and business for the time being is in suspense. The fact is that most large concerns have supplied themselves with all the material they need up to the end of June, and both sides are hesitating about business for the third and fourth quarters of the year. In other words, we have again a waiting market, and both sides propose to make as big a bluff as possible. Upon the whole, the advantage seems to be with the sellers. In foundry iron an occasional weakening is recorded among Northern furnaces, but the Southern makers are very stiff and have all the business they can possibly handle, while they do not seem to entertain any doubts about the future. The Bessemer Pig Iron Association holds a meeting the last of the week, and will then settle on prices for the third quarter, but from the tone of the reports it is not probable that there will be any giving way.

In finished material comparatively little has been done. A large number of small contracts for structural work are pending, which will make a heavy business in the aggregate. The railroad people are calling for a good deal of iron and steel, while the locomotive and car builders are also very good customers.

Less export business has been closed than might have been expected from the number of inquiries received. There are two reasons for this, one being that foreign buyers want earlier deliveries than can possibly be given them; the other point is the question of ocean freight rates. These rates are very high, and it is difficult to get freight room when it is wanted.

Birmingham, Ala. March 26.

(From Our Special Correspondent.)

There are sales of iron being made in this section of the country, though it is admitted that no great big order is being given, the purchasers being still of the opinion that a reduction in prices will occur in the near future. The aggregate of the orders, however, is very handsome and the furnacemen say they see no reason why there should be any concessions made as to prices to secure business. Prices remain firm and steady and are most satisfactory. There is still a little scarcity of No. 2 foundry, while gray forge, which is in demand more than other grades, could be more plentiful also. There is no iron accumulating and the shipments are heavy. During this week or the first of next week, another furnace should go into blast. Williamson Furnace, located in this city, now leased by the Messrs. Perry Brothers of Birmingham. Mary Pratt Furnace, located also in this city and belonging to the Alabama Consolidated Coal and Iron Company, will follow. Oxmoor Furnace, which went into blast about ten days ago, is doing well.

The following are the quotations given: No. 1 foundry, $18.50; No. 2 foundry, $17.50; No. 3 foundry, $16.50; No. 4 foundry, $16@$16.50; gray forge, $16; No. 1 soft, $18.50; No. 2 soft, $17.50.

The Dimmick pipe plant at North Birmingham is nearing completion rapidly and will be ready to begin operation in the near future. The plant will consume quite an amount of pig iron. The foundries and machine shops are still running smoothly with plenty of work on hand and bright prospects for the future. The repairing of furnaces give these industries much work.

Buffalo. March 28.

(Special Report of Rogers, Brown & Co.)

It is becoming quite evident that buying continues of a hand-to-mouth nature; buyers are holding off from making long time contracts and only purchasing enough to keep running. Yet these orders that are being placed to simply cover immediate wants are amounting to more than is generally realized. Prices, however, continue ragged. Leading furnaces hold firmly to the basis mentioned below, but here and there prices are cut by furnaces not so well known and whose output is not up to the required standard. We quote on the cash basis, f. o. b. cars Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, $24@$24.50; No. 2, $23.50 @$24; Ohio strong softener No. 1, $24.25@$24.75; No. 2, $23.25@$23.75; Jackson County silvery, 8%, $31; Southern soft No. 1, $23.50; No. 2, $22.50; Lake Superior charcoal, $26@$27; coke malleable, $24.50@$25.

Chicago. March 27.

(From Our Special Correspondent.)

Pig Iron.—Small orders continue to come in in fair numbers, most of them being for immediate delivery. There apears but little buying for delivery beyond a few months hence. The market is firm, though here and there a small concern will quote below circular. Quotations are as follows: Lake Superior charcoal, $25.50@$26; local foundry No. 1, $24.50@$25; No. 2, $23.50 @$24; No. 3, $22.50@$23; local Scotch No. 1, $25@$25.50; Ohio strong softeners No. 1, $24.50@$25.50; Southern coke No. 1, $22.85@$23.35; No. 2, $21.85@$22.35; No. 3, $20.85@$21.30; Southern No. 1 soft, $22.85@$23.35; No. 2 soft, $21.85@$22.85; malleable Bessemer, $25@$26; Southern silveries, $24.

Cleveland, O. March 29.

(From Our Special Correspondent.)

Iron Ore.—The sales of iron ore continue few and are scattering. The movement of ore from the docks on Lake Erie to the furnaces has been considerably freer of late and this is a hopeful sign, since, when taken in conjunction with the practical certainty of a moderately late opening of navigation, it insures the unloading docks being in better condition than at the opening of navigation at any time for years past. The question of the date of the navigation opening is now uppermost in the minds not only of vesselmen, but ore shippers as well. From present reports, which indicate that the ice is still solid at the upper Lake ports, it would hardly seem likely that the ore boats will be able to come down with their first cargoes before May 1st, which was about the time that the work opened last season; but several of the vessel owners have given their engineers instructions to be ready to start up the Lakes on April 10th, and if no delays are encountered this should bring the initial cargoes to Lake Erie ports not later than April 20th. Season chartering is now practically over and the wild or daily market will henceforth become the scene of activity. It begins to look, too, as if the vesselmen who have been holding their boats in anticipation of high charter fees may not be far wrong in their expectations. The grain elevators are full to overflowing and there is a big demand for boats in this trade. As has been previously explained, all the best boats on the Lakes are tied up for the season in the ore trade, and the result naturally to be expected has been induced in that the grain shippers show a tendency to offer all kinds of rates for tonnage. The prices which they are already paying are equivalent to $1.30 on ore, and inasmuch as there is a difference of 10c. per ton in unloading charges, it looks very much as if single charters for vessels in the ore trade would open at $1.40 or better. Reports from the mines received at the operating offices here are entirely satisfactory and indicate that the docks will be well filled ere the first boats arrive. Nominal quotations are: No. 1 specular and magnetic, Bessemer, $6@$6.50; No. 1 specular and magnetic, non-Bessemer, $5 @$5.25; red hematite, Bessemer, $5.25@$5.50; red hematite, non-Bessemer, $4@$4.50. Season charters for ore carrying: From the head of the Lakes, $1.25; from Marquette, $1.10; from Escanaba, $1.

Pig Iron.—The market has been appreciably more active this week, but nothing approaching what it would be were it not for the influence exerted by the strike of machinists now in progress in this city, which threatens to tie up a number of plants indefinitely. At the same time all grades are strong at the figures quoted. Little is doing in Bessemer, a majority of consumers being provided for their full requirements up to August 1st and not disposed to negotiate beyond that at present. The labor trouble is affecting the foundry grades, but the demand is nevertheless quite fair. We quote: Bessemer, $24 in the Valley; No. 1 foundry, $23; No. 2 foundry, $22.50; gray forge, $21.50; Lake Superior charcoal, $25.50.

Plates.—The market in almost all grades which has been rather weak for some time past shows signs of improvement due largely to the determined stand being made by some of the larger mills, which are refusing to meet cut prices. There is considerable ship business in the market. A Buffalo yard is understood to be figuring on a new vessel of some size, and the American Ship Building Company—the new trust of the lake yards, the principal offices of which are at Cleveland—has practically closed contracts for several vessels of moderate size.

Scrap.—The market has shown no new developments. The demand is still fair in a majority of lines, with a noticeable weakness in one or two items. We quote: Steel melting stock, $21.75; No. 1 cast, $16.50; No. 1 wrought, $19.50; iron rails, $25.50; car wheels, $24; turnings, $13.50; borings, $12.

Philadelphia. March 28.

(From Our Special Correspondent.)

Pig Iron.—In some cases concessions are being openly made, and in some few cases, not at all. Bessemer iron, however, is very strong, and so is basic, which brings about the same prices, although there is very little selling. Forge iron has dropped in price. No. 1 foundry is held at $24, although some has sold as low as $23; basic, $22; Bessemer, $22.50.

Merchant Bar.—Most of the purchasers are small buyers. Ordinary iron is quoted at 2c.

Skelp Iron.—There are large inquiries, but none to be had.

Pipes and Tubes.—While no very large orders have been placed, there are inquiries coming along which indicate a good demand. Orders are taken at full prices.

Plate.—The shaded quotations for plate iron are stimulating orders in a small way. Steel plates have sold as low as 2c., although 2.10c. is the ordinary price for ¼-in.; flange is as high as 2.40@2.50c.

Structural Material.—No doubt a great amount of structural iron work is contemplated, but the parties concerned keep it in the background.

Steel Rails.—There are inquiries in the market for steel rails, but the only answer is $35. There will be some large orders for girder rails; a large amount of trolley line work is projected.

Old Rails.—The quotations for old rails are $25@$27; old steel rails, $23@$24; old car wheel, $22; iron axles, $26@$28; heavy steel scrap, $23. There is very little scrap of any kind.

Pittsburg. March 28.

(From Our Special Correspondent.)

Within the next few days a meeting of the Bessemer Pig Iron Association will be held for the purpose of fixing the quotations on both Bessemer and basic pig iron for the second half. Already the Association is in receipt of a number of inquiries for Bessemer for delivery the third and fourth quarters, among them being

one from the largest steel producer for 100,000 tons. Much speculation has been going on as to what the prices for Bessemer would be for the second half. It is believed here that the disquieting rumors from the East were calculated with a view of having the quotations of the first half reduced for the second half. This, however, will not be the case. There will be no reduction, and the furnacemen believe that conditions are such as not to warrant their making an advance. It can be authoritatively stated that the price will remain the same. Sales of odd lots aggregating about 5,000 tons were made during the week for delivery through July. There is little doing in foundry and forge iron in this district. The foundrymen are purchasing for immediate consumption only, and are holding back for a weaker market. Although their refusal to place orders in advance had its effect on the market several weeks ago, there is evidence that foundry iron has recovered from the temporary weakness. There is little Southern iron of any kind to be had. A truce has evidently been declared between the two plate mills that have caused the price on tank plates to drop so materially during the past three or four weeks. Better than 2c. cannot be secured on tank plates, large orders, and for assorted widths 2.15@2.25c. is quoted. Eastern mills are still causing the bar mills in this district considerable trouble by selling below the agreed quotations on steel bars. Common iron bars are held at 2.15c., Valley, and refined at 2.40c. Pittsburg. Muck bar and skelp is in little demand, and the sales during the past few weeks have been very limited. Merchant pipe is reported in good demand, the largest production having a large number of orders booked months in advance.

Pig Iron.—Sales aggregating 5,000 tons of Bessemer were made during the past week at the association price of $24, Valley, for delivery through the month of July. Foundry iron, although not in very great demand, is holding its own, and since the Eastern furnaces have gone out of the market, has recovered from its reported weakness. Forge iron is in little demand and the price remains at about $21 a ton, Pittsburg or Valley.

Steel.—There is very little doing in Bessemer steel billets, and only small sales have been reported during the week. For 4 x 4 billets the prevailing quotation is $35 a ton at mill, while for small billets $36 is asked. These quotations are shaded slightly for large orders. The structural steel market is very strong. All the mills in this district are being operated at their fullest capacity, and during the week orders amounting to $300,000 have been received by mills in this district.

Sheets.—It is generally believed by the trade that the new sheet combine will advance its prices above the minimum established by agreement some time ago. The minimum price agreed upon at that time was 3.05c. for No. 27 gauge and 3.10c. for No. 28 gauge. It is probable that the minimum will be 3.20c. for both these gauges of black sheets. Galvanized is strong, and the discount on large lots is 75% with the usual 15c. freight allowance.

Ferro-manganese.—Furnaces are still working on orders placed several months ago, and the price remains at $125, Pittsburg.

New York. March 30.

The local market is still somewhat unsettled. In foreign trade we note shipments of $20,000 worth of mining machinery and $7,000 worth of railroad material at Colombia; shipments of $70,000 worth of manufactured iron to Australia; good-sized shipments of bridge material and railroad material to China and Japan; recent shipments of $175,000 of agricultural machinery to France, and shipments to Denmark of $32,000 worth of mining machinery, $22,000 worth of iron pipe, and $20,000 worth of agricultural machinery.

Pig Iron.—There is a trifle more activity to the market. Bessemer and basic irons are the firmest, the weakness in certain Pennsylvania foundry irons continuing. We quote for delivery to July, Northern brands, tidewater delivery: No. 1 X foundry, $23.50@$24.25; No. 2, $22@$23; No. 2 plain, $20.75@$21.25; Southern brands, New York delivery: No. 1 foundry, $22.75@$23.25; No. 2 foundry, $21.50@$22; No. 1 soft, $22.50@$23.25; No. 2 soft, $21.50@$22; No. 3 foundry, $21.25.

Bar Iron and Steel.—The market shows little strength. Prices are unchanged. We quote refined iron up to 2.30c. on dock, and common 2.05@2.10c. Soft steel bars, 2.45c.

Plates.—There is weakness at Pittsburg, but Eastern mills have more confidence than last week. We quote for large lots at tidewater: Tank, ¼-in. and heavier, 2.15c.; tank, 3/16-in., 2.35c.; shell, 2.45c.; flange, 2.55c.; marine, 2.80c.; firebox, 2.80c.; universals, 2.35c.

Steel Rails and Rail Fastenings.—There is more inquiry and a few sales of small lots are reported. We quote for standard sections $35 f. o. b. Eastern mills. Smaller rails are quoted: 12-lb., $40; 16-lb., $40; 20-lb., $40; 30-lb. to 40-lb., $38; 40-lb. to standard, $36, with the usual advance for small orders. We quote angle bars, 2.35c.; fish plates, 2.30c.; spikes, 2.70c.

Structural Material.—Contracts for various new buildings continue to be closed. We quote in large lots at tidewater: Beams, 2.45c.; channels, 2.45c.

Nails.—The nail market is unchanged. Wire nails for carload lots on dock are quoted $3.55; cut nails, $2.75.

METAL MARKET.

NEW YORK, March 30, 1900.

Gold and Silver.

Gold and Silver Exports and Imports

At all United States ports in February and year.

Metal.	February.		Year.	
	1899.	1900.	1899.	1900.
GOLD.				
Exports	$ 567,962	$1,403,658	$2,323,413	$7,094,948
Imports	5,148,906	1,899,378	11,541,250	3,887,650
Excess	I. $4,580,944	I. $ 495,720	I $9,217,837	E. $3,207,298
SILVER.				
Exports	4,319,074	4,952,644	9,699,880	9,551,843
Imports	1,427,027	2,786,095	4,555,879	4,916,430
Excess	E. $2,892,047	E. $2,166,549	E. $5,144,001	E. $4,635,413

This statement includes the exports and imports at all United States ports, the figures being furnished by the Treasury Department.

Gold and Silver Exports and Imports, New York

For the week ending March 29th, 1900, and for years from January 1st, 1900, 1899, 1898, 1897.

Period	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
We'k	$5,782	$22,738	$786,208	$95,612	E. $673,640
1900..	2,925,984	1,065,704	9,823,450	1,082,884	E. 10,600,846
1899..	1,227,229	4,645,644	7,453,253	728,756	E. 3,206,082
1898..	3,835,335	31,039,611	9,721,309	1,332,363	I. 18,812,330
1897..	1,055,911	1,069,479	10,169,543	578,635	E. 9,637,640

Exports and imports of gold were in small lots to and from various ports. Exports of silver went chiefly to London; imports were from Mexico and the West Indies.

The United States Assay Office in New York reports the total receipts of silver at 124,000 oz. for the week. Total since January 1st, 1,437,000 oz.

Prices of Foreign Coins.

	Bid.	Asked
Mexican dollars	$ .47¾	$ 49
Peruvian soles and Chilean pesos	.44	.46
Victoria sovereigns	4.86	4.88
Twenty francs	3.88	3 90
Twenty marks	4.75	4.88
Spanish 25 pesetas	4.78	4.82

Average Prices of Silver per oz. Troy.

Month.	1900.		1899.		1898.	
	Lond'n Pence.	N. Y. Cents.	Lond'n Pence.	N. Y. Cents.	Lond'n Pence.	N. Y. Cents.
January	27.30	59.30	27.42	59.36	26.29	56.77
February	27.49	59.76	27.44	59.42	25.89	56.07
March	.....	.....	27.48	59.64	25.47	54.90
April	.....	.....	27.65	60.10	25.95	56.02
May	.....	.....	28.15	61.23	26.31	56.98
June	.....	.....	27 77	60.43	27.04	58.61
July	.....	.....	27 71	60 26	27.32	59.06
August	.....	....	27.62	60.00	27 48	59.54
September	.....	.....	27.15	58.89	28.05	60.68
October	.....	.....	26.70	57.98	27.90	60.42
November	.....	.....	27 02	58.67	27.93	60 60
December	....	.....	27.21	58.99	27.45	59..42
Year	.....	.....	27.44	59.58	26.76	58.26

The New York prices are per fine ounce; the London quotation is per standard ounce, .925 fine.

Average Prices of Metals per lb., New York

Month.	COPPER.		TIN.		LEAD.		SPELTER.	
	1900.	1899.	1900.	1899.	1900.	1899.	1900.	1899.
Jan	15 58	14.26	27.07	22.48	4.68	4.18	4.65	5.34
Feb	15.78	17.02	30.58	24.20	4.675	4.49	4.64	6.28
March	.....	16.35	.....	23.82	.....	4.37	.....	6.31
April	.....	17.13	.....	24.98	.....	4.31	.....	6.67
May	.....	17.20	.....	25.76	.....	4.44	.....	6.88
June	.....	16.89	.....	25.85	.....	4.43	.....	5.98
July	.....	17.10	.....	29.63	.....	4.52	.....	5.82
August	...	17.42	.....	31.53	.....	4.57	.....	5.65
Sept	.....	17 34	.....	32 74	.....	4.58	.....	5.50
October	.....	16.94	.....	31.99	.....	4.575	.....	5.32
Nov	.....	16.49	.....	28.51	.....	4.575	.....	4.64
Dec	.....	15.85	.....	25.88	.....	4.64	.....	4.66
Year	.....	16.67	.....	25.12	.....	4.47	.....	5.75

Commencing with March 17th, the prices given in the table for copper are the averages for electrolytic copper; this is the case for both 1899 and 1900. The average price for Lake copper for the year 1899 was 17.51c. For January, 1900, the average price of Lake copper was 16.33c.; for February, 16.08c.

Financial Notes of the Week.

General business has been without special event during the week. The volume of trade continues very large everywhere. The railroad

Imports and Exports of Metals.

Port.	Week, Mar. 28.		Year 1900.	
	Expts.	Impts.	Expts.	Impts.
***New York.**				
Aluminum.....long tons	.....	.....	13	41
Antimony ore... " "	.....	‡180	.....	713
" regulus.. " "	.....	‡10	...	138
Chrome ore..... " "	.....	.....	.....	151
Copper, fine ..... " "	3,212	.....	26,582	5,232
" matte.. " "	.....	.....	281	.....
" ore..... " "	.....	.....	.....	640
" ash..... " "	.....	.....	.....	23
Ferro-Chrome .. " "	.....	.....	.....	10
Ferro-mangan'se " "	.....	‡50	.....	140
Iron ore ..... " "	.....	.....	.....	7,824
" pig, bar, rod " "	.....	.....	1,365	1,332
" pipe..... " "	995	.....	3,663	124
" plates, sheets " "	.....	.....	284	.....
" pyrites..... " "	.....	.....	.....	2,700
Lead..... " "	1,940	1,300	22,663	13,356
" ore.. ..... " "	.....	.....	.....	2,100
" dross ..... " "	.....	.....	24	...
Manganese, ore. " "	.....	‡20	...	1 981
Metals, old, scrap " "	43	‡239	528	2,131
Composition... " "	15	.....	869	.....
Nails. ..... " "	697	.....	8,332	...
Nickel .. " "	30	.....	462	45
" ore, matte " "	.....	.....	.....	2,821
§Railr'd material " "	.....	‡115	435	1,038
Rails, old..... " "	.....	.....	.....	518
Spiegeleisen..... " "	.....	‡15	.....	165
Steel bars, plates " "	90	‡730	2,102	5 663
" rails..... " "	1,620	.....	11,943	18
" wire..... " "	857	.....	3,950	.....
" not spec'd. " "	267	‡111	1,757	870
Tin .. " "	.....	1.218	...	6,506
" dross or ashes " "	.....	.....	3	...
" and black plates " "	.....	‡373	.....	8 620
Zinc..... " "	.....	.....	.....	31
" dross..... " "	42	.....	186	50
" ashes, skim " "	.....	.....	394	10
" ore..... " "	.....	.....	3,531	.....
†Baltimore.				
Antimony regulus...casks	.....	.....	.....	.....
Chrome ore.....long tons	.....	.....	.....	2,930
Copper, fine..... " "	1,301	60	13 189	1,703
" matte... " "	.....	.....	.....	...
" pipe..... " "	.....	.....	...	.....
Ferro-manganese " "	.....	.....	.....	.....
Ferro-silicon..... " "	.....	.....	.....	.....
Iron pig, bar. etc. " "	84	1,378	372	9,059
" ore..... " "	.....	15,078	.....	154,770
" pyrites..... " "	.....	3,100	.....	11.893
Manganese ore.. " "	.....	.....	.....	56,495
Metals, old & Rails " "	.....	.....	251	...
Nails .. " "	.....	.....	577	.....
Pipe, iron & steel " "	.....	.....	1,709	...
Spiegeleisen.. " "	.....	.....	...	...
Steel, bars, pl'es.. " "	.....	260	.....	363
" wire ..... " "	150	22	434	47
" rails..... " "	9,806	.....	27,393	....
not specified.. " "	.....	.....	...	...
Tin..... " "	.....	.....	.....	67
" and blackplates " "	.....	192	.....	748
" other..... " "	.....	.....	.....	.....
Zinc..... " "	.....	.....	.....	.....
" dross, skim. " "	.....	.....	.....	.....
" oxide..... " "	.....	.....	.....	.....
***Philadelphia.**				
Antimony ....long tons	.....	.....	.....	.....
Chrome ore .... " "	.....	.....	.....	.....
Copper, fine..... " "	.....	.....	737	.....
" ore..... " "	.....	.....	...	6,872
" old..... " "	.....	.....	.....	.....
Ferro-manganese " "	.....	.....	.....	.....
Ferro-silicon ... " "	.....	.....	.....	.....
Iron, pig..... " "	.....	.....	.....	2,124
" ore..... " "	.....	‡15,280	.....	80,260
" pyrites..... " "	.....	.....	.....	.....
Manganese ore.. " "	.....	‡5,300	.....	17,200
Steel sheets..... " "	.....	.....	.....	.....
Spiegeleisen..... " "	.....	.....	.....	3,500
Tin..... " "	.....	.....	.....	90
" and black plates " "	.....	.....	.....	1,367
Zinc dust ..... " "	.....	15	...	5

Total United States.§§

Articles.	Feb., 1900.		Year, 1900.	
	Expts.	Impts.	Expts.	Impts.
Antimony.. ..... long tons	....	411	.....	497
" ore.... " "	.....	6	.....	348
Copper fine .... " "	14,815	2,911	27 704	7,224
" ore & matte " "	705	1,148	1,080	3,270
Iron, pig & bar.. " "	9,559	9,071	19,554	15,948
" ore..... " "	.....	91,306	.....	181,021
Iron & steel plates " "	2,215	2,226	4,203	3,397
Iron & steel rails " "	18,315	.....	34,521	287
" " wire " "	5,314	122	11,606	259
Lead, pigs, bars & old ..... " "	9	1	39	12
Lead in ore, etc. " "	10,133	8,595	14,860	12,586
Manganese ore and oxide. .... " "	..	20,106	.....	55,362
Nickel " &matte " "	167	.....	298	.....
Nails, cut..... " "	517	.....	1,352	.....
" wire ..... " "	4,279	.....	8,474	.....
Quicksilver... .. " "	79	.....	107	.....
Steel, billets, rods, etc..... " "	2,370	2,458	6,461	7,050
Tin ..... " "	20	1,854	20	4,825
" &black plates " "	5	3,741	21	10.130
Zinc ..... " "	1,267	19	2,363	243
" ore ..... " "	2,008	.....	4,267	...

*New York Metal Exchange returns. †By our Special Correspondent. §Not specified. ‡ Week ending Mar. 19th. §§ Monthly returns, Treasury Department.

Import Duties on Metals.

The duties on metals under the present tariff law are as follows: Antimony, metal or regulus, ¾c. a lb. Lead, 1¼c. a lb. on lead in ores; 2½c. per lb. on pigs, bars, etc.; 2½c. on sheet, pipe and manufactured forms. Nickel, 6c. per lb Quicksilver, 7c. per lb. Spelter or zinc, 1½c. per lb. in pigs and bars, 2c. on sheets, etc. Copper, tin and platinum are free of duty.

reports now coming in show large traffic in all directions. Money is comparatively easy this week.

The silver market has ruled very steady without special feature, closing slightly lower at 27 9-16d. in London.

The statement of the United States Treasury on Wednesday, March 28th, shows balances in excess of outstanding certificates as below, comparison being made with the statement of the corresponding day last month.

	Mar. 21.	Mar. 28.	Changes.
Gold	$98,396,577	$98,391,432	D. $5,145
Silver	7,950 599	8,953 248	I. 1,002,649
Legal tenders	11,151,223	10,584,846	D. 566,377
Treas. notes, etc.	923,161	943,100	I. 19,939
Totals	$118,421,560	$118,872,626	I. $451,066

Treasury deposits with national banks amounted to $116,450,906, an increase of $4,622,575 during the week.

The statement of the New York banks—including the 63 banks represented in the Clearing House—for the week ending March 24th, gives the following totals, comparison being made with the corresponding weeks in 1899 and 1898:

	1898.	1899.	1900.
Loans and discounts	$600,168,400	$779,481,800	$739,331,100
Deposits	688,650,500	902,250,700	800,116,400
Circulation	13,861,400	13,820 800	19,260,700
Reserve:			
Specie	136 289,600	190.262,500	146,245,800
Legal tenders	68,974,500	53,857,600	59,600,600
Total reserve	$205,264,100	$244,120,100	$205,846,400
Legal requirements	171,412,625	225,562,675	200,029,100
Balance, surplus	$33,851,475	$18,557,425	$5,817,300

Changes for the week, this year, were increases of $391,300 in circulation, $670,000 in legal tenders, and $3,130,875 in surplus reserve; decreases of $12,560,700 in loans and discounts, $13,966,300 in deposits, and $1,030,700 in specie.

The following table shows the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars and comparison is made with the holdings at the corresponding date last year:

	1899.		1900.	
Banks.	Gold.	Silver.	Gold.	Silver.
N.Y. Ass'd.	$190,262,500	.....	$146,245,860	.....
England	162,387,500	.....	177,504,150	.....
France	364,508,490	$239,720,135	387,496,705	$228,874,860
Germany	152,205,000	74,410.000	140,305,000	72,280,000
Spain	58,240,000	56,300,000	68,320,000	76,240,000
Aus.-Hun	149 640.000	52,170,000	187.735.000	42.900,000
Neth'l'ds	21,560,000	34 395,000	24,850.000	30,420,000
Belgium	15,965,000	7,985,000	14.725,000	7,360,000
Italy	76,130,000	11.750,000	77.060,000	8.010.000
Russia	487,985,000	22,720,000	418,455,000	31,570,000

The returns of the Associated Banks of New York are of date March 24th, and the others are of date of March 22d, as reported by the "Commercial and Financial Chronicle" cable. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports gold only.

Shipments of silver from London to the East for the year up to March 15th, 1900, are reported by Messrs. Pixley & Abell's circular as follows:

	1899.	1900.	Changes.
Iadia	£1,017,000	£934,062	D. £82,938
China	264,180	127,295	D. 136 885
The Straits	24,907	12,150	D. 3,757
Totals	£1,306,087	£1,082,507	D.£223,580

Arrivals for the week, this year, were £160,000 in bar silver from New York, £16,000 from the West Indies, and £10,000 from Chile; total, £186,000. Shipments were £56,095 in bar silver to China, £11,735 to Colombo, and £6,600 to Bombay; total, £74,430.

Indian exchange has been easier, chiefly on account of the purchase and shipment of silver to India. The Council bills offered in London were taken at an average of 16.03d. per rupee.

The foreign merchandise trade of Great Britain for the two months ending February 28th is given in Board of Trade returns as below:

	1899	1900.
Imports	£76,755,715	£82,160,722
Exports	50,728,010	57,861,321
Excess, imports	£26,027,705	£24,299,401

There was an icnrease of £5,405,007, or 7%, in imports; an increase of £7,133,311, or 14.1%, in exports; a resulting decrease of £1,728,304, or 6.6%, in the balance of imports. The movement of gold and silver for the two months is reported as follows:

	Imports.	Exports.	Excess.
Gold:			
1900	£7,012,436	£2,342,890	Imp. £4,669,546
1899	4,631,371	3,959,118	Imp. 672,253
Silver:			
1900	2,082,085	2,092,285	Exp. 10,199
1899	2,722,826	2,436,313	Imp. 286,513

Of the silver imported this year, £1,806,741, or 89.2%, of the total, came from the United States, as compared with £1,574,273, or 57.8%, last year.

Other Metals.

Daily Prices of Metals in New York.

March.	Sterling Exchange.	Silver. Fine oz. Cts.	Silver. London. Pence.	Copper. Lake. cts. ₩ lb.	Copper. Electrolytic ₩ lb.	Copper. Lond'n £ ₩ ton.	Tin, cts ₩ lb.	Lead cts. ₩ lb.	Spelter. N. Y. cts. ₩ lb.	Spelter. St. L. cts. ₩ lb.
24	4.85¼	59⅞	27⅝	16½	16½	.....	31	4.67½	4.55	4.40
26	4.85¼	59¾	27⅞	16⅝	16½	78¾	30½	4.67½	4.55	4.37½
27	4.85⅛	59⅝	27⅝	16⅝	16½	78⅝	31	4.67½	4.55	4.35
28	4.85¼	59⅞	27⅝	16⅝	16⅝	78¼	31½	4.67½	4.55	4.37½
29	4.86	59¾	27⅞	17	16⅝	78¼	32	4.67½	4.55	4.37½
30	4.86	59⅝	27⅛	17	16⅝	78½	32½	4.67½	4.55	4.37½

London quotations are per long ton (2,240 lbs.) standard copper, which is now the equivalent of the former g. m. b's. The New York quotations for electrolytic copper are for cakes, ingots or wirebars; the price of electrolytic cathodes is usually 0.25c. lower than these figures.

Copper.—The market continues strong and active both here and abroad. Consumption is excellent and manufacturers report that large orders are being placed for early, as well as distant deliveries. Exports from this country continue at an enormous rate and supplies are greatly depleted. A number of important producers are reported to have sold all their product available for the next few months. We quote Lake copper at 16⅞@17c.; electrolytic in cakes, wirebars and ingots at 16½@16⅝c.; in cathodes at 16⅜@16½c., and casting copper at 16½c.

For electrolytic copper it is said that some transactions have been made even below 16½c., while some dealers claim that over 16⅝c. should be quoted. As we have noted on another page, it is claimed by some large producers that ⅛c., or even less, should measure the difference in value between Lake and electrolytic copper. While we incline to this view so far as intrinsic values are concerned, it is a fact that the actual difference in sales is often greater than this—at present it varies from ⅛ to ⅜c. Our business in this column is, however, not to express opinions but to register as nearly as possible actual facts as represented by the sales occurring from day to day.

The London market, which closed last week at £78 7s. 6. for spot and £76 5s. for futures, opened 7s. 6d. higher. The beginning of the week it fluctuated but little. On Thursday it was £78 5s. for spot and £77 for three months, thus bringing these two deliveries closer together. It closes at £78 10s. for spot, £77 2s. 6d. for three months.

Refined and manufactured sorts we quote: English tough, £78 10s.@£79; best selected, £79 10s.@£80; strong sheets, £83; India sheets, £80; yellow metal, 7d.

Tin.—The London market his week has fluctuated violently and buyers in consequence have held back. The volume of business reported was less than last week, and the range of prices lower. At the close we quote spot tin at 32½c., April delivery 31½c.

The London market, which closed last week at £134 for spot and £131 for futures, opened at £132 for spot and £130 for three months. On Tuesday it was cabled as £133 10s. for spot and £129 10s. for three months, and on Wednesday £134 for spot and £130 15s. for three months. One Thursday £137 10s. for spot, £136 5s. for three months. It closes £2 higher at £139 10s. for spot and £138 15s. for three months.

Imports of tin into the United States for the two months ending February 28th were: East Indies, 2,904,572 lbs., Australia, 156,849 lbs.; Great Britain and Holland, 7,590,328 lbs.; other countries, 155,528 lbs.; total, 10,807,277 lbs., against 12,454,540 lbs. in 1899. This is a decrease of 1,647,263 lbs. this year.

Lead.—The market has been active and a good business has been done. Prices are unchanged, and we quote New York 4.65@4.70c., St. Louis 4.55@4.57½c.

The foreign market is unchanged, Spanish lead being quoted at £16 11s. 3d., English at £16 15s.

Imports of lead in various forms into the United States and exports of foreign lead for the two months ending February 28th were, in pounds:

Imports:	1899.	1900.
Lead in ores and bullion	33,751,680	28,966,030
Lead, metallic	171,671	26,239
Total	33,743,351	28,992,269
Exports of foreign lead	25,044,349	33,273,3 5
Balance imported	7,799,002	
Balance exported	.....	4,286,046

Of the lead imported this year, 27,555,083 lbs. (95%) was from Mexico, 1,154,261 lbs. (4%) from Canada, and the balance from other countries. The exports this year exceeded the imports.

Imports of lead into Great Britain for the two months ending February 28th are reported as below, in long tons:

	1899.	1900.
Spain	14,505	12,387
Australasia	14,213	8,769
United States	5,187	6,945
Other countries	1,403	2,657
Totals	35,308	30,758

The decrease this year was 4,550 tons, or 12.8%; the chief loss was from Australasia. The lead credited to the United States was chiefly Mexican lead refined here in bond.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead continued firm during the week, with sales of common at 4.57½c. Desilverized brands are being held at 4.65c.

Spelter.—The market remains quiet and dull. Some cheap parcels have been offered, but buyers continue apathetic. Consumption of this metal appears to have decreased. We quote New York at 4.55c., St. Louis at 4.35@4.37½c.

The foreign market is cabled as £21 7s. 6d. for good ordinaries, £21 10s. for specials.

Exports of spelter or metallic zinc from the United States for the two months ending February 28th were 5,294,988 lbs., against 5,867,680 lbs., a decrease of 572,692 lbs. Exports of zinc ore were 4,267 tons, against 2,998 tons in 1899, an increase of 1,269 tons.

Antimony.—There is no change: Cookson's, 10½@11c.; Hallett's, 9¾@9⅞c.; U. S. Star, 9½@9⅝c.

Imports of antimony ore into the United States for the two months ending February 28th were 348 long tons. Imports of antimony regulus or metal were 498 long tons.

Nickel continues firm and demand very brisk. Quotations are firm at 40 and 45c., according to size of order.

Exports of nickel, nickel oxide and nickel matte from the United States for the two months ending February 28th were 298 long tons.

Platinum.—Demand is good, and prices are firmer. In large lots we quote $17.75, and for smaller quantities, $18 per oz., in New York.

For chemical ware (crucibles and dishes), best hammered metal, we quote as follows: In lots of 250 grams or more, 68c. per gram, and for smaller quantities, 70c. per gram; unmanufactured platinum will be supplied in same quantities at 2c. less per gram.

Quicksilver.—Quotations remain unchanged at $51 per flask for large lots, New York. For small orders the prices are $52.50@$54. The London price continues at £9 12s. 6d., with the same figure named for second hands.

San Francisco quotations are $51.50@$52 per flask for local deliveries, and $46.50@$47 for export.

Quicksilver receipts at San Francisco in February were 1,728 flasks; for the two months ending February 28th they were 3,713 flasks, against 4,397 in 1899 and 3,877 in 1898. The reduction was not due to a falling off in production, but to increased shipments direct from the mines to inland points. Shipments by water from San Francisco for the two months were: China, 1,000; Australia, 100; Central America, 300; Mexico, 846; Puget Sound, 5; total, 2,251 flasks. This is 838 flasks less than last year.

Exports of quicksilver from all United States ports for the two months ending February 28th were 237,368 lbs., against 279,225 lbs. in 1889; a decrease of 41,857 lbs.

Minor Metals and Alloys.—Wholesale prices, f. o. b. works, are as below:

Aluminum.	Per lb.		Per lb.
No. 1, 99% ingots	33@37c.	Ferro-Titanium (20%)	$1.00
No. 2, 90% ingots	31@34c.	Ferro-Tungsten (37%)	40c.
Rolled sheets	42c. up	Magnesium	$2.75@$3
Alum.-bronze	20@23c.	Manganese (over 99%)	$1.05
Nickel-alum	33@39c.	Mangan'e Cop. (20% Mn)	60c.
Bismuth	$1.70	Mangan'e Cop. (30% Mn)	70c.
Chromium (over 99%)	1.10	Molybdenum (Best)	$1.45
Copper, red oxide	60c.	Phosphorus	40@50c.
Ferro-Moly b'um (50%)	$1.05	Tungsten (Best)	$1.00
Ferro-Titanium (10%)	90c.		

Variations in price depend chiefly on the size of the order.

LATE NEWS.

Exports of iron and steel, including machinery, from the United States, were valued at $18,758,745 this year and $14,065,817 in 1899; showing an increase of $4,692,928, or 33.4%. The increase this year was entirely in machinery; in pig and bar iron and steel there was a decrease, while rails showed a small increase.

Hastings County, Ontario.

(From Our Special Correspondent.)

Atlas Arsenic Company.—This company has its new 10-stamp mill at Deloro running on the Gatling Five Acres. The plant is equipped with crushers, Wilfley tables and vanners, and power is furnished by a 60 H. P. engine. About 30 tons of ore are handled daily; the company intends to add a cyanide plant and arsenic works to treat the tailings. The vein is reported to be from 6 to 10 ft. wide, carrying a high percentage of mispickel. Air drills are used. About 35 or 40 men are at present busy under W. A. Hungerford, manager. The company is a Cleveland, O., concern. G. M. Spottswood is assayer.

Canadian Goldfields of Deloro.—The company's 10-stamp mill is running steadily and the arsenic plant is turning out a good product.

CHEMICALS AND MINERALS.

(For further prices of chemicals, minerals and rare elements, see page 410.)

New York. March 30.

The imports and exports of chemicals at all United States ports in February were as below:

Articles.	February,		Year, 1900.	
	Imports.	Exports.	Imports.	Exports.
Bleaching Powder, lbs.	12,521,123	452	23,296,010	452
Caustic Soda, lbs.	397,409	61,557	1,434,013	175,122
Sal Soda, lbs	227,800	.....	773,106	.....
Soda Ash, lbs.	8,234,236	2.000	20,604,205	2,000
Chlorate of Potash, lbs.	61,598	.....	145,971	3,920
Copper Sulphate, lbs.	....	7,560,247	.....	11,818,768
Nitrate of Soda, tons.	14,684	182	21,090	482
Muriate of Potash, lbs.	1,954,154	114,794	13,252,719	114,794
Phosphate Rock, tons.	8,072	45,978	23,327	89,991
Pyrites, "	23,913	.....	48,473	.....
Brimstone "	4,666	1	17,381	5
Saltpeter, lbs.	672,220	..	2,461,034	.....

Increase of imports as compared with January are noted in bleaching powder and nitrate of soda, and of exports in bleaching powder, soda ash, copper sulphate, muriate of potash and phosphate rock.

Heavy Chemicals.—A large business for 1902 delivery of domestic alkali is reported at 80@85c., f. o. b. works, and of caustic soda at $1.90 f. o. b. works. For this and next year's delivery orders have been booked at quotations below. Bleaching power of Continental make is easier. The other heavy chemicals show a moderate volume of business both for prompt and forward shipment. We quote, per 100 lbs., as below:

Articles.	Domestic.		Foreign.
	F.o.b. Works.	In New York.	In New York.
Alkali, 58%.	85@90	95@1.10	$.92½@95
" 48%.	90@95	1.00@1.15	1.02½@1.07½
Caustic Soda, high test	$2.25@$2.37½	$2.37½@2.50	$2.50@2.60
powd., 60%	.....	3.00@3.25	.....
70@74%.	.....	3.25@3.50	.....
98%.	.....	3 50@4.00	3.75@4.00
Sal Soda 70@80.	....	.....	67½@72½
" conc.	1.45@1.75	....	1.60@1.65
Bicarb. Soda.	1.25@1.37½	.....	1.75@2.00
" " extra	3.25@3.50	.....	.....
Bleach Pdr., Eng. prime.	.....	....	2.00 @2.25
other br'nds.	....	....	1.75@2.00
Chl. Pot cryst	.. ..	9.50@9.75	9.50@10.00
" powd.	....	10.00@10.25	10.50@11.00

Acids.—Demand is improving for most acids, while prices are pretty firmly held. Blue vitriol shows an increased export inquiry.

Quotations as below are for large lots delivered in New York and vicinity, per 100 lbs. unless otherwise specified.

Acetic, No.8 in lbs.	$1.62½
Blue Vitriol, ..	5.00@5.12½
Aqua Fortis, 36°	3 62½
Aqua Fortis, 38°	3 87½
Aqua Fortis, 40°	4.12½
Aqua Fortis, 42°	4.50
Muriatic, 18°	1.20
Muriatic, 20°	1.35
Muriatic, 22°	1.50
Nitric, 36°	$3.87½
Nitric, 38°	4.12½
Nitric, 40°	4.37½
Nitric, 42°	4.75
Oxalic	5.87½@6.00
Sulphuric, 66°	1.20
Sulphuric, 60°	1.05
" bulk 50° ton	14.00
Sulphurous, 100% SO_2 anhydrous.	8.00@10.00

Brimstone.—Arrivals at this port aggregate 3,200 tons for the week. Best unmixed seconds hold at $21.75@$22 per long ton on spot, and $21@$21.25 for shipments, while thirds are quoted $2 per ton less.

Pyrites.—There was imported from Huelva, Spain, this week, 3,919 metric tons iron pyrites. Demand keeps up well, and prices rule firm. We quote: Mineral City, Va., lump ore, $4.50 per long tons (basis 42%), and fines, $4.20. Charlemont, Mass., lump, $5.50, and fines, $5. Pilley's Island, lump, nominally, $6.50, and fines $4.50 per long ton, delivered in New York. Spanish pyrites, 13@15c. per unit, according to percentage of sulphur contents, delivered ex-ship New York and other Atlantic ports. Spanish pyrites contain from 46% to 51% of sulphur; American, 42% to 44%, and Pilley's Island, N. F., 50%.

Fertilizing Chemicals.—Buying is slow, while prices are strong, and stocks of the leading ammoniates small. The menhaden fish fertilizers sold in 1899 amounted to about 43,000 tons dried and acid scrap, valued at $648,336. Adding the waste obtained from the food fisheries makes the total value $1,300,000. Sulphate of ammonia gas liquor, for immediate delivery, holds at $3.10 per 100 lbs., while shipments were offered at $3.07½. High-grade Western blood sold at $2.30 per unit, f. o. b. Chicago, while New York soft is bought up for months ahead. Tankage is sold up for prompt delivery, and for next month's shipments $2.10 per unit is asked f. o. b. Chicago. Concentrated tankage holds at $1.95@$1.97½ per unit, f. o. b. Chicago; domestic steam ground bone at $21 per ton, and Calcutta bone meal at $24@$26. Regular bone-black brings $20@$21 per ton, and spent, $15@$16 per ton. Potash salts are quoted as follows: Muriate of potash, 80@85%, basis of 80%, $1.83@$1.86½ per 100 lbs.; sulphate of potash, 90@98%, $2.05½@$2.08½ per 100 lbs.; double manure salt, 48@53%, $1.06@$1.08½ per 100 lbs.; kainit (25% sulphate of potash), $9.05@$9.55 per long ton; sylvinit, 35@37% potash, 38@41½c. per unit. These quotations are on the basis of foreign invoice weights, tares and analysis in quantities of not less than 500 tons bulk salts, or 50 tons concentrated salts.

Nitrate of Soda.—Sales of spot goods have been made at $2.25@$2.30 per 100 lbs., and nearby at $2.20, while shipments are quoted at $1.70 and upward, according to position. The "Indianic" arrived with 4,200 tons.

Phosphates.—This market is comparatively quiet both here and abroad. The ruling high freight rates have caused a lull in exports. In the producing districts operations continue on a fairly large scale. The shipments of phosphate rock from Maury and Hickman County, Tennessee, in February amounted to 3,953 tons, and from Davidson County mines, 183 tons. For the first two months this year the total shipments from Mt. Pleasant, Tennessee, amounted to 65,234 long tons, which compares with 62,626 tons in November-December, 1899. The movement from Beaufort, S. C., in February aggregated 1,375 tons to Baltimore, as against 3,868 tons in January. Charleston, S. C., sent forward in February 9,812 tons crude rock, against 4,846 tons in January.

Ocean freight rates from Florida ports are about as follows: To Baltic ports, $4.90 per ton; Continental, $4.62, and Mediterranean ports, $4.75, while from Savannah, Ga., to the United Kingdom $4 is asked. We quote as follows:

Phosphates.	F. o. b. Am. Shipping Port.	C. i. f. Un'd Kingdom or No Sea Ports.	
		Unit.	Long ton.
Fla. hard rock (77@80%)	$8.00@8.50	8¼@8½d	$12.87@13.25
Fla. land pebble (68@73%)	4.35.....	7d	9.80
Fla. Peace River (58@63%)	3.00@3.50	6¼@6½d	7.50 @ 7.80
Tenn. rock (78@80%)	3.25@3.75	6¾@7d	10.67@11.06
Tenn. rock (65@75%)	2.25@3.00	.....	.....
So. Car. rock, crude	3.75@4.00	.....	.....
So. Car. rock, dried	4.50@4.75	.....	.....
Algerian, rock (63@70%)	.....	7d	9.30
Algerian, rock (58@63%)	....	6¾d	8.18

Concentrated phosphates, 13@15%, average P_2O_5, 60c. per unit ($8.40 per ton) at sellers' works. South Carolina acid phosphates, 14%, $6.25 per ton in bulk f. o. b. Charleston. Tennessee acid phosphates, high grade, $10 per short ton, and low grade, $8 g. o. b. Nashville.

Liverpool. March 20.

(From Our Special Correspondent.)

The chemical market is quiet as regards fresh business, but tone is firm all round. Soda ash is in moderate supply, while values are unchanged, varying according to destination. We quote spot range for tierces about as follows: Leblanc ash, 48%, £4 15s.@£5 per ton; 58%, £5@£5 5s. per ton net. Ammonia ash, 48%, £4 5s.@£4 10s. per ton; 58%, £4 10s.@£4 15s. per ton cash. Bags 5s. per ton under price for tierces. Soda crystals are in fair demand at £3 2s. 6d. per ton, less 5% for barrels, or 7s. less for bags; with special terms for a few favored markets. Caustic soda in steady request, although not active, while prices are well maintained, the spot range being about as follows: 60%, £9 5s.; 70%, £10 5s.; 74%, £10 15s.; 76%, £11 per ton net cash. There is a little offering in second hands at a trifle under quotations named. Bleaching powder is quiet at £7@7 5s. per ton net cash, for hardwood packages. Chlorate of potash is selling to a fair extent, and makers are firm at 4½d. per lb. net cash, while there are a few resale parcels to be had at a shade less money. Bicarb. soda is selling at varying prices according to market, ranging from £5 5s. to £6 15s. per ton, less 2½% for the finest quality in 100-lb. kegs, with usual allowances for larger packages. Sulphate of ammonia is firm at £12 7s. 6d. @£12 10s. per ton, less 2½% for good grey 24@25% in double bags f. o. b. here, and a fair trade passing. Nitrate of soda is moving off to a moderate extent at about £9@£9 2s. 6d. per ton, less 2½%, for double bags f. o. b. here, as to quantity and quality.

MINING STOCKS.

Complete quotations will be found on pages 397 and 398 of mining stocks listed and dealt in at:

Boston	Philadelphia.	London.
Colo. Springs.	Spokane.	Mexico.
Denver.	Salt Lake.	Paris.
New York.	San Francisco.	Toronto.

New York. Mar. 30.

Transactions in copper shares have been larger and prices are higher than last week. Amalgamated was bought ex-dividend of $2 per share at $96½@$96¾, and later regular trading was reported at $97⅛@$97¼. Anaconda gained from $47 to $49½, and Tennessee, which has been dormant for weeks, showed extensive dealings around $15. Union of North Carolina sold at $10, but it has since dropped to $8.

More is doing in the California shares. Quicksilver preferred made large sales at $8.25@$10.12½. Standard Consolidated sold up to $3.30, and later at $3.15. Brunswick brought 27c. Syndicate sold down to 2c.

In the Colorado section Isabella sold off 5c. at $1.20; Work, 1c. at 34c.; Consolidated, 1c. at 14c. Alamo was firm at 17c.; Creede & Cripple Creek at 13c.; Mollie Gibson at 21c.; Adams at 20c.; Argentum Juniata at 21c.; Little Chief at 21c.; Small Hopes at $1.10, and Iron Silver at 70c. Pharmacist Consolidated gained a half point at 14½c. Concerning Union of Cripple Creek, reports have come from Colorado Springs that heavy buying has been done for John Dern, the president of the Mercur Mining Company, of Utah. It is claimed that he now owns about 800,000 shares of Union Stock.

Horn Silver of Utah sold at $1.15.

Of the Comstocks, Consolidated California & Virginia went up to $1.75, while Ophir held at 80c., Sierra Nevada at 55c., Mexican at 29c., and Potosi at 22c.

American Smelting and Refining common shares were stronger at $42@$42¾, while the preferred showed little change at around $91.

An additional $2,000,000 common stock of the Colorado Fuel and Iron Company was listed on the New York Stock Exchange, making $17,000,000 in all.

The National Tube Company has declared a quarterly dividend of 1¾% on the preferred stock, payable April 2d.

The Seaboard Steel and Casting Company, of Chester, Pa., has been chartered with a capital of $500,000. The principal incorporators are C. L. Magee, of Pittsburg; John B. Roach, W. C. Sproul and J. Henry Cochran, Edwin S. Cramp, C. A. Porter and Joseph Wharton, all of Philadelphia; Millard Salsbury and Thomas H. Savery, Wilmington, Del.; George E. Weed, Henry P. Booth, William Rowland and Richard C. Veit, of New York. Mr. Roach, Senator Sproul, Josiah Smith, of Chester; Joseph W. Cochran, Jr., of Williamsport, and Mirabeau Sims, of New Haven, are directors.

The International Silver Company (the silverplate combine) held its annual meeting in Jersey City on March 21st, and selected the retiring board of directors, as follows: Samuel Dodd, Geo. H. Wilcox, Geo. C. Edwards, C. A. Hamilton, H. J. Lewis, F. P. Wilcox, G. M. Curtis, C. H. Tibbits, E. M. Post, W. H. Watrous, S. L. Barbour, O. F. Thomas, G. D. Munson, E. R. Thomas, C. E. Breckinridge, W. J. Miller, Geo. Rockwell. The following officers were elected: President, Samuel Dodd; first vice-president, Geo. H. Wilcox; second vice-president, Geo. C. Edwards; third vice-president, C. A. Hamilton; treasurer, Samuel Thomas; assistant treasurer, G. M. Curtis; secretary, George Rockwell; auditor, O. F. Thomas. The balance sheet of the company as of January 31st, 1900, gave the value of the various plants at $16,140,252.

The Carnegie Company organized on March 27th by the election of directors and officers. Neither Andrew Carnegie nor H. C. Frick are among them. The company will assume control of the Carnegie Steel Company, and its constituents on April 1st. The officers are: President, Charles M. Schwab; first vice-presidnt, L. C. Phipps; secretary, A. M. Moreland; treasurer, William W. Blackburn; general counsel, James H. Reed and P. C. Knox of Pittsburg and James B. Dill of New York.

At the annual meeting of the National Salt Company at Jersey City, F. F. Culver, W. W. Hawley, W. S. Eddy, F. R. Blount and W. C. Gouinlock were elected directors. The report of President White outlined the completion of the organization as originally contemplated. The company now controls more than 90% of the salt manufactured in the United States east of the Rocky Mountains. Economies in the manufacture and distribution of this enormous quantity of salt have been perfected, it was said, that are in excess of dividend requirements.

Boston. March 29.

(From Our Special Correspondent.)

We have many assurances of a broader and stronger market for coppers, and prices really have gone up considerably. There is more show of life, in fact, than at any time since the Globe Bank explosion wrecked the market. It is very evident, however, that this is purely an inside movement, and the public are taking no interest whatever as far as buying is concerned, though they are quite willing to sell at every upward turn. The blind pool interest promised us a bull market by the end of March, and for once seem to have thought it expedient to keep its promise; but thus far all engineering has been a failure as far as the public is concerned. We are thoroughly discouraged, and three months has not been long enough for us to climb out of the hole into which blind pool tactics plunged us. I see, by the way, that some of our daily papers are publishing pathetic letters complaining of the coldness with which banks look upon the coppers as collateral; but bankers do not need these pitiful wails.

There was some interest in the gold stocks, but prices are rather depressed. Cochiti was held at $11½; Merced, $6½; Melones, $3; Santa Ysabel, $1½; while North American Gold Dredging was $2 bid.

The quicksilver stocks are also making some showing. New Idria was quoted at $10½; Napa Consolidated, $10; Aetna, $4; and Boston Consolidated, $2½.

In the general list Central Oil was $18; United States Oil, $18½@$19. New England Gas and Coke brought $17@$17½; Dominion Coal, common, $45; Montana Coal and Coke, $8.

The stockholders' committee of the Santa Ysabel has made a report in favor of spending further money on exploration. It is proposed to transfer the property to a new company with a capital of $750,000 in $5 shares. The present stockholders are to pay $1 a share to come into the new company, of which Mr. Charles Praff is to be president. The chances are that most of the stockholders will pay up.

Salt Lake City. March 24.

(From Our Special Correspondent.)

Conditions rule about unchanged; the dividend-payers are steady, some showing a marked advance, while the speculative prospects are growing softer. However, there is an improvement in investment buying, which is a happy omen. The feature of the week is the new Daly-West record, selling at $18 with cheery indications of the upward movement holding. Business in these shares has been considerable, which has given tone to the local market—a sale after the close of the call to-day was 1,000 at $18.

Ajax keeps up its ore shipments as promised, but the shares fail to show strength. Centennial-Eureka moved up to $25 in anticipation of the new company's initial dividend in April. There are calls from Boston for these shares and this is one of the first mining stocks to recover on that market. Daisy is played with in large chunks around ½c. and a few seem to think it yet will prove a surprise. Company's total debt is $34,000, which is double the worth of the surface plant at second-hand. Dexter further sags. February's gross yield was $9,-500, against a current expense account of over $15,000. Eagle & Blue Bell has placed another allotment of treasury shares at $1. Horn Silver is higher and in better demand, which is in keeping with news from the mines. Joe Bowers and Joe Bowers Extension have softened after the spurt of last week. Lower Mammoth continues active. It did business up to 54, closing a shade under 50. Mammoth directors forgot to say a word about the dividend at their meeting this week.

San Francisco. March 24.

(From Our Special Correspondent.)

The market this week has been more active, and stocks are generally stronger. Consolidated California & Virgina brought $1.75; Ophir, 90c.; Sierra Nevada, 61c.; Best & Belcher, 43c.; Hale & Norcross, 29c.; Gould & Curry, 28c.; Chollar, 25c.

There are now 14 assessments of Comstock companies pending. Three of these—Confidence, Consolidated California & Virginia, and Ophir—call for 20c. per share each; 8—Caledonia, Chollar, Gould & Curry, Mexican, Potosi and Sierra Nevada, Union Consolidated and Yellow Jacket—want 15c. per share; Hale & Norcross calls for 10c., while Andes and Crown Point are more modest and are satisfied with 5c. a share each.

The Producers' Oil Exchange of San Francisco, Cal., a consolidation of the California Oil Exchange and the former Producers' Oil Exchange, was formally organized this week with 131 members. The officers of the old Producers' Exchange resigned, and most of them were re-elected, as follows: George W. Terrill, president; W. S. Edwards, vice-president; Joseph L. King, chairman; R. W. Heath, secretary, and W. F. Balding, treasurer. A list of 41 oil stocks was called the first time at the new consolidated exchange.

Some quotations noted for oil stocks are: Home, $3.65; Yukon, $1.20; Barker Ranch, $1.15; Shamrock, 70c.; Anaconda, 55c.

London. March 17.

(From Our Special Correspondent.)

The South African market keeps very quiet. Nothing whatever is doing, but prices remain firm. The victories of the English Army in the Orange Free State and the occupation of Bloemfontein have had a very cheering effect, but unfortunately the uncertainty as to the intentions of the Boers casts a considerable gloom over the market. Their threats to demolish Johannesburg before they submit are feared to be real, for the average business man that has had dealings with South Africa understands the stubbornness of the Boer character. Besides, from experience in the present war, and from the ravages on private property and the destruction of houses and farms, it is only legitimate to conclude that the Boer will wreak his vengeance on everything that belongs to the Uitlander or enemy. Consequently the ultimate fate of the Johannesburg mines, or especially the surface plants, still hangs in the balance and neither the public nor the professional speculator is at all inclined to do anything in the market.

The West Australian section has occupied the bulk of the attention in the mining market, and the whole of the movements have centered round the sulphide problem at Kalgoorlie. The situation gets gradually more acute and the bears have their own way. Rumors have been assiduously circulated that the Sulman-Teed process as adopted by the London & Hamburg Gold Recovery Company and their expert, Dr. Diehl, has been a failure entirely at Hannan's Brownhill, but the report seems a little previous as the plant has not got into proper operation yet as far as the sulphide ores are concerned. Then, again, the result of the examination of the Associated property is looked forward to with considerable anxiety, and in the meantime the rumor mongers are provided with excellent opportunities for exercising their ingenuity. The whole question of Kalgoorlie ores requires thorough discussion and a revelation of the present state of affairs there will afford considerable interest when it is made. As in all new mining districts, the richest and simplest ores are worked first, in fact unless such a rule were followed no new mining district could ever be developed. It appears that the time has now arrived when the oxidized ores and the richest sulphides and tellurides at Kalgoorlie are approaching exhaustion, even in the largest mines, such as Lake View, Associated, etc. The problem now before the directors is how to treat economically the large masses of lower grade sulphides and tellurides. It also appears that in some of the veins a telluride of mercury occurs, which further complicates matters. It seems to me that the directors and mine managers are not tackling the problem in an open-minded way. Instead of sitting down and studying the metallurgy of the ores and experimenting on economical processes for treating them, they are thinking out schemes for applying various patented processes in which they themselves have a financial interest. This was the case at Great Boulder, where the unknown and untried Koneman process was taken up under a contract that was a very one-sided affair. And now the leading mines are adopting the process which is an amplification of the Sulman-Teed process. The ins and outs and ramifications through which the process goes before it actually gets to the ores are wonderful, and ever so many people and companies get a whack out of it before any operations are actually conducted. The only Kalgoorlie company that is going about its business in a reasonable manner is the Great Boulder Main Reef. In this case both controller and mining engineer are Americans and their chief aim is to find a process that will bring results without having to pay royalties for the privilege of using patented processes the value of which is quite problematical. They confine themselves to roasting and cyaniding and get the best extraction with the least expenditure.

Though the English investor has had few opportunities of putting money into mining ventures during the last six months, there have been a few home industrial promotions which have offered good value. This week some of the Marquis of Bute's collieries in South Wales have been floated publicly under the name of the Lewis Merthyr Consolidated Collieries, Limited, Naturally Sir W. T. Lewis is chairman and his co-directors are all local celebrities. The output at present is about 800,000 tons per annum. Most of the iron and coal companies in the United Kingdom have been doing a good trade this year and their shares are in demand. Another new company about to be floated is the South Durham Steel and Iron Company, which is to take over certain iron and steel works at Stockton and Hartlepool. The works have been hitherto directed by the Gray family, but in the new company much new blood will be introduced, the versatile and ubiquitous Sir Christopher Furness having a seat on the board.

Paris. March 18.

(From Our Special Correspondent.)

The copper shares have again been the special feature of the mining stock market. Rio Tinto made a sharp advance of 40 fr., and there is a report that a special dividend will soon be declared which will bring the payment for 1899 up to 100 fr. per share. The other copper stocks are very strong and Boleo shares have gone above 2,000 fr.

The Transvaal gold shares have been weak, notwithstanding the successes of the British Army. It is not alone that men are discussing the possibility that the Boers may revenge themselves by a wholesale destruction of mining property. Putting this aside, it begins to be seen that the necessary expenses of repair and renewal will be very heavy, and that in any event the mines will have to pay in taxes at least a part of the cost of the war. This will most probably overbalance any saving in expenses which the abolition of monopolies and other changes might permit. All this tells upon the market.

As to the present state of the mines, we are getting very little information that is of value. Some definite and direct statements of what is being done in Johannesburg would be of great service.

The movement of gold and silver in France is reported by the Ministry of Commerce as below for the month of January:

	Imports. Francs.	Exports. Francs.		Excess. Francs.
Gold:				
1900.....	42,588,778	10,742,960	Imp.	31,845,818
1899.....	29,660,927	4,059,055	Imp.	25,601,872
Silver:				
1900.....	12,390,693	13,477,530	Exp.	1,086,837
1899.....	10,395,924	15,597,812	Exp.	5,201,888

Imports of copper and nickel coins, taken at their face or coinage value were 1,800 fr., against 7,200 fr. in 1899. Exports were 4,500 fr., against 4,600 fr. in 1899.

The foreign merchandise trade of France for the two months ending February 28th is reported by the Ministry of Commerce as below:

	1899. Francs.	1900. Francs.
Imports	715,362,000	686,030,000
Exports	498,090,000	545,544,000
Excess, imports.....	217,272,000	140,486,000

The decrease in imports was 29,332,000 fr., while the increase in exports was 47,454,000 fr.; leaving a decrease of 76,786,000 fr. in the balance of imports.

The anxiety about coal supply continues. The only measure so far taken by the Government has been to reduce the rate on coal from the Gard and from Cette to Lyons, about 350 km., from 12 fr. to 8.25 fr. The reduction is only temporary, however.

Azote.

ASSESSMENTS.

NAME OF COMPANY.	Location.	No	Delinq.	Sale.	Amt.
Acorn	Utah	2	Apr 21	May 12	.00½
Alaska	Utah	..	Apr. 25	May 14	.02
Badger	Ore..	1	Apr. 2	May 2	.10
Cahfornia Borax	Cal..	2	Mar. 5	Apr. 2	2.00
Caledonia	Nev..	48	Mar 12	Apr. 2	.15
Central Eureka	Cal..	14	Mar. 17	Apr. 9	.03
Chollar	Nev..	51	Apr. 25	May 16	.15
Con., Cal. and Va.	Nev..	15	Apr. 10	May 1	.20
Confidence	Nev..	34	Apr. 18	May 9	.20
Constellation	Utah	...	Mar. 15	.....	.01½
Crown Point	Nev..	78	Mar. 29	Apr. 19	.05
Eureka Swansea Ext.	Utah	1	Apr. 16	May 15	.00½
Excelsior Drift	Cal..	...	Apr. 30	.....	.03
Goleta Con	Cal..	1	Mar. 3	Apr. 30	.06
Great Eastern	Utah	3	May 10	Apr. 2	.00½
Gould & Curry	Nev..	89	Apr. 10	May 2	.15
Hale & Norcross	Nev..	...	Apr. 9	.....	.10
Horseshoe Bar Con	Cal..	...	Apr. 14	.....	.02
Joe Bowers Ext	Utah	6	Mar. 14	Apr. 4	.01
Little Chief	Utah	3	Mar. 31	Apr. 18	.01
Mariposa Com'l & Mg	Cal..	15	Mar. 12	Apr. 3	10.00
Martha Washington	Utah	4	Mar. 19	Apr. 7	.01
Maxfield	Utah	7	Apr. 30	May 28	.09
Mayflower Gravel	Cal..	...	Apr. 21	.....	.07½
Meteor	Utah	...	Apr. 14	May 17	.00½
Mexican	Nev..	63	Apr. 11	May 2	.15
Old Home, Con	Cal..	...	Apr. 21	.....	.01
Omaha	Utah	1	Apr. 2	Apr. 17	.02
Pacific	Utah	2	Apr. 9	Apr. 24	.00½
Potosi	Nev..	55	Apr. 18	May 9	.15
Reward	Cal.	...	Apr. 12	.....	.02½
R. G. W	Utah	4	Apr. 4	Apr. 19	.00½
Sailor Con	Cal..	3	Apr. 14	May 5	.01
Sierra Nevada	Nev.	118	Mar. 13	Apr. 2	.15
Silver Park	Utah	1	Mar. 10	Mar. 28	.04
Skagit Cumb'la'd Coal	Was.	7	Apr. 17	May 15	.01½
Snow Flake	Utah	...	Mar. 1	Mar. 31	.05
Success	Utah	8	Mar. 17	Apr. 14	.01
Union Con	Nev..	59	Apr. 10	Apr. 30	.15
Yankee Con	Utah	2	Mar. 31	Apr. 17	.01
Yellow Jacket	Nev..	3	Apr. 10	May 15	.15

ANNUAL MEETINGS.

Name of Co.	Locat'n.	Date.	Place of Meeting.
Butte & Boston	Mont...	Apr. 3.	30 Broad St., N. Y.
Champion	Cal.....	Apr. 13.	San Francisco, Cal.
Playa de Oro	Ecuador	May 1	Versailles, Ky.
Franklin	Mich....	Apr. 18.	19 Congr's St., Boston
Goleta	Cal.....	May 19	San Francisco, Cal.
Sloss Iron & St'l..	Ala.	Apr. 4.	Birmingham, Ala.
South Swansea	Utah....	Apr. 3.	Salt Lake City, Utah
Tasmania Copper	Colo	Apr. 19.	Denver, Colo.
.....	.....	.....	.....
.....	.....	.....	.....

DIVIDENDS.

NAME OF COMPANY.	Latest Dividend. Date	Per share.	Total.	Total to date.
†Amalgam'ted Copper	Apr. 30	$2.00	$1,500,000	$4,500,000
†Aetna, Cal	Apr. 2	.15	15,000	225,000
†Am. Sm. & Ref., pf.	Apr. 10	2.14	695,175	1,832,675
†Am. St. & Wire com	Apr. 2	1.75	875,000	875,000
†Am. St. & Wire, pf.	Apr. 2	1.75	700,000	4,200,000
Anaconda Copper	Apr. 30	2.00	2,400,000	14,550,000
Arizona Copper	Apr. 1	1.32	421,153	1,379,572
†Boston & Colo. Sm	Apr. 2	.75	1,250	292,500
Buffalo Hump	Apr. 1	.01	10,000	20,000
†Cent'ial-Eureka(new)	Apr 5	1.00	100,000	100,000
†Federal Steel, pf.	Apr. 20	1.75	1,597,830	6,391,320
*Independence T. & M	Apr. 12	.01	12,500	37,500
†International Sil., pf.	Apr. 1	1 75	743,750	743,750
*International Zinc	Apr. 1	.01	6,000	15,000
*Lillie, Colo	Apr. 2	.05	11,367	338,168
Monarch, Colo	Apr. 6	.12	12,000	120,000
†Napa, Cal	Apr. 2	.20	20,000	1,080,000
†New Idria	Apr. 2	.20	20,000	210,000
Pacific Coast Borax	Dec. 29	5.00	100,000	522,500
Wolverine, Mich	Apr. 2	2.00	120,000	390,000
.....	.....	.....	.....	.....

*Monthly. †Quarterly.

STOCK QUOTATIONS.

NEW YORK.

NAME OF COMPANY	Location.	Par val.	Mar. 23 H.	Mar. 23 L.	Mar. 24. H.	Mar. 24. L.	Mar. 26 H.	Mar. 26 L.	Mar. 27. H.	Mar. 27. L.	Mar. 28. H.	Mar. 28. L.	Mar. 29 H.	Mar. 29 L.	Sales
Adams	Colo.	10	....	....	....	.17	....	20	....	.17	....	.14	....	....	1,000
Alamo	"	1	.17	....	.17	.6¾	....	17	....	....	....	....	....	....	3,5 0
Ama'gamated C	Mont.	100	96.75	96.50	98.00	97.75	97 00	....	96.88	96 75	97.00	96 75	96.75	96.50	12,.00
Anaconda, c	"	25	45.88	45.50	47 00	46.00	47 88	47.00	48.0	47 00	49.50	47.75	49.00	....	15,375
Anaconda Gold	Colo.	5	.94	....	....	....	33	....	.33	....	.53	....	.34	....	....
Argentum-Jun.	"	2	2	....	....	....	18	....	.18	....	21	....	....	....	1,500
Ariz. Lead	"	....	12.88	12.63	12 88	12.63	12 88	12 68	14.50	14 00	14 50	14.00	14.50	14 00	....
Brit.Col.Copper	B. C.	10	10.00	9.50	10.00	9.50	10.00	9.50	10.00	9 50	10 00	9.50	10.25	10 00	....
Brunswick	Cal	1	2	....	....	....	32	....	.27	....	.23	....	25	....	200
Caledonia	S. Dak	....	.50	....	1.50	....	.50	....	....	....	.50	....	.50	....	....
Cholar	Nev.	....	20	....	....	....	.20	....	17	....	15	....	.18	....	....
Confidence	"	3	....	....	86	....	....	....	....	....	....	....	....	....	100
Consol'd K	"	100	.08¾	....	08¾	....	.08	....	.03	....	.03	....	.03	....	2,000
do. bonds	"	100	65	....	....	....	....	....	.03	....	.13	....	....	....	....
Con. Cal. & Va.	"	2½	1.7	....	....	....	1.45	....	1.60	....	1.75	....	1.45	....	420
Cr & Cr. Creek	Colo.	1	....	....	....	....	.13	....	.13¾	....	.13	....	....	....	1,000
Cripple Cr. Con.	"	1	....	....	.15	....	.15	....	.14	....	....	....	....	....	2,500
Daly	Utah.	20	1.5	....	....	....	....	....	1.45	....	....	....	....	....	400
Deadw'd Terra.	S. Dak	25	.60	....	.75	....	.60	....	.65	....	.60	....	.60	....	100
Elkton	Colo	1	....	....	....	....	....	....	1.25	....	1.20	....	....	....	200
Garfield Con.	"	1	....	....	....	....	.16	....	.15	....	....	....	....	....	....
Golden Age	"	1	.04	....	....	....	....	....	....	....	.04	....	....	....	3,000
Golden Fleece	"	1	.26	....	....	....	.80	....	.40	....	.30	....	.35	....	500
Homestake	S. Dak	100	50 00	....	....	....	50.00	....	50.00	....	50.00	....	....	....	....
Horn Silver	Utah.	25	1.20	....	....	....	1.15	....	1.15	....	1.15	....	1.15	....	400
Iron Silver	Colo.	20	.65	....	....	....	.77	....	.65	....	.70	....	....	....	1,000
Isabella	"	1	1.25	....	....	....	1.25	....	1.20	....	1.20	....	....	....	200
King & Pemb.	Ont.	10	....	....	....	....	.40	....	.40	....	....	....	....	....	....
Lacrosse	Colo.	10	.14	....	....	....	.14	....	.14	....	.14	....	....	....	....
Lady Helen	"	1	....	....	....	....	....	....	....	....	80 00	78.00	....	....	....
Leadville Con.	"	10	.07	....	.08	....	.07	....	.08	....	.08	....	.07	....	1,900
Little Ch'ef	"	1	.21	....	....	....	.20	....	.21	....	.21	....	.20	....	100
Little Tiger	Cal.	1	15.00	13.00	15.00	13.0	15.00	13.00	20.0	16.00	20.00	16.00	20.0	15.00	....
Mexican	Nev.	3	.24	....	....	....	.29	....	.24	....	.20	....	.20	....	300
Mollie Gibson	Colo	1	.22	....	....	....	.21	....	....	....	.20	....	....	....	300
Moulton	Mont.	25	.30	....	....	....	.25	....	.25	....	.25	....	.30	....	....
Mt. Rosa	Colo.	1	....	....	....	....	.70	....	.70	....	....	....	....	....	....
Ontario	Utah.	100	8.50	....	8.75	....	8.50	....	8.50	....	8 25	....	8.50	....	30
Ophir	Colo	1	.8	....	....	....	.80	....	80	....	.73	....	.72	....	500
Pharmacist	"	1	.15¾	....	....	....	.14	....	.12¾	....	.14¾	....	....	....	1,500
Phœnix	Ariz.	1	.10	....	....	....	.09	....	.10	....	.09	....	....	....	....
Plymouth	Colo.	1	.10	....	....	....	.10	....	.11	....	....	....	....	....	....
Portland	"	1	2.40	....	....	....	2.20	....	2 35	....	....	....	....	....	....
Potosi	Nev.	3	2	....	.22	....	....	....	.18	....	.22	....	.15	....	3,300
Quicksilver	Cal.	100	1.50	....	....	....	1 50	....	1 75	....	1.77	....	2.50	....	400
do. pref	"	100	8.2	....	....	....	10.00	8.25	....	....	10.15	9.50	....	....	4,025
Savage	Nev.	2	12	....	....	....	....	....	14	....	.12	....	.12	....	....
Sierra Nevada	"	3	60	....	.60	....	.50	....	.55	....	.55	....	.51	....	1,000
Small Hopes	Colo.	20	....	....	....	....	....	....	1.10	....	....	....	....	....	90
Standard Con.	Cal	1	3.50	....	3 15	....	3 30	....	3.10	....	3 25	3 15	3 10	....	1,000
Tenn Copper	Tenn	10	14 50	13.50	14.50	13.50	14.00	....	4 00	....	15.50	14.75	15.50	15.25	500
Union Con.	Nev	2½	.20	....	....	....	.18	....	.11	....	.15	....	....	....	....
Utah	Utah.	1	....	....	....	....	.14	.11	.08	....	....	....	....	....	1,000
Work	Colo	1	....	....	....	....	.35	....	.35	....	.34	....	....	....	1,100
Yellow Jacket	Nev	3	.18	....	....	....	.14	....	.15	....	.12	....	.12	....	....

COAL AND INDUSTRIAL STOCKS.

Am. Sm. & Ref.	.....	$100	40⅜	40	40⅝	42⅝	40	40⅝	4.⅜	42	4.⅜	42⅝	40	....	13,5⅝
" " " pf	.....	100	92⅝	92	91	....	*91	....	91⅛	91	91	92⅜	90	....	2,33.
Am.S & W Con	.....	100	55⅞	65⅛	56⅜	55⅝	57	56½	58¼	56⅝	58⅛	57	55⅝	....	77,09⅝
" " pf'rn	.....	100	....	....	....	....	91⅜	91	91	....	91⅜	92⅜	9	....	1,510
Am. Tin Plate	.....	100	32⅝	....	.33⅛	33	33	3.⅜	34	32⅝	34	33⅝	33¾	....	3,54
" " pf	.....	100	....	....	....	....	82	....	....	....	85	....	....	....	2.0
Col. Fuel & I.	Colo.	100	49¾	47¾	49¼	47⅜	49⅝	49	51⅝	49⅝	51⅜	50¼	49¾	....	31,6⅝
Col. & H C.&I	"	100	18⅝	18	18	....	18⅝	18	18¼	17⅜	19⅜	18¼	17⅜	....	12,15
Federal Steel	"	100	51¾	50⅜	51⅝	50⅞	52⅝	51⅝	54⅝	52	54⅝	53⅛	53¼	....	74,100
" " pf	.....	100	75⅜	75⅛	75⅝	....	75⅝	75⅝	76⅜	75⅝	76	75¾	75⅝	....	7 354
Fleming'n C &C	W.Va.	100	24	23	24	23	25	23⅝	25	23	25	23	25	23	80
Int'l Pump	"	100	22⅜	21⅜	23⅛	21⅜	21⅜	21⅜	21⅜	20⅝	22	21⅛	22	2.⅜	200
National Lead	N. Y	100	24⅜	24⅛	24⅜	24⅛	24¾	24⅜	24⅝	24⅛	24⅝	24⅛	....	....	2,8⅝
" " pf	.....	100	....	....	104⅛	....	104⅝	104	104⅝	103¾	104⅜	....	....	....	355
National Salt	"	100	49⅜	48⅜	49½	48⅜	49⅜	48⅛	51	48⅝	49⅜	4.⅜	49⅜	48	200
" " pf	.....	100	79	77	80	....	79	77	79	78	79	78	79	78	....
Nat'l Tube	"	100	54	51⅜	52¼	51⅝	53⅜	52	5.⅛	5.⅜	58⅝	53⅜	52⅝	....	10,976
Press. St. Car	Pa.	100	53	....	52⅜	....	....	....	55⅜	53	....	....	52⅜	....	2,475
" " " pf	.....	100	85	84⅜	8.⅛	....	84¼	....	....	....	84⅜	84	....	....	2,425
Republic I & S.	"	100	22	21⅝	22⅜	22	24⅜	22¼	23⅝	22⅜	23	....	22⅝	....	1,035
" " " pf	.....	100	67⅜	65⅝	6.⅜	....	66⅝	66	66⅜	65⅞	66	66	69⅛	68⅜	8,300
Sloss-Shef.	"	10	30	28	30	28	30	28	3.	28	3.⅝	29⅛	3	29	1,883
" " pf	Ala.	100	71	69	70	68⅜	69⅜	68⅝	*69⅜	68⅝	*69⅜	68⅝	69⅛	68⅜	400
Stan.Oil of N J.	"	100	528	5 6	528	526	530	529	53.	2.⅝	5.5⅜	52⅛	527	524	60
Tenn.C.,I.&R.R.	"	.00	95	94	94¾	94⅛	95⅜	94⅜	96	94	96	95	94⅜	....	5'0
" " pf	"	.00	....	....	....	....	....	....	....	....	....	....	....	....	13,890
U.S.Cast I.P&F	.....	10	7⅛	6⅝	7⅛	6⅝	7⅛	6⅝	8	7	7⅜	7	7⅜	7⅛	....
" " pf	.....	100	49	48	49	48	49	48	49	48	49	48	48⅜	48	....
Va.Coal & C	W.Va.	100	25	23	25	.3	24	20	23	.0	22	20	....	....	....

* Ex-dividend Total sale-, 3.9.9.

PHILADELPHIA, PA.*

NAME OF COMPANY.	L'cation.	Par Val.	Mar. 22. H.	Mar. 22. L.	Mar. 23. H.	Mar. 23. L.	Mar 24 H.	Mar. 26 H.	Mar. 26 L.	Mar 27. H.	Mar. 28. H.	Mar. 28. L.	Sales
Am. Alkali	.....	.....	....	....	....	....	2.38	....	2.50	2 25	2.38	....	2 38	....	2,390
" " pf.	.....	.....	....	....	1.00	.75	....	....	....	....	....	....	....	....	160
Bethlehem Irn	Pa.	.....	8.00	....	....	....	8.00	....	....	....	....	....	58 00	....	204
Bethlehem S'l	"	$50	18 25	18.00	18.3	18.00	18.13	....	18.5	17 75	18.25	8 13	18 8	18 13	4,9..
Cambria Iron	"	50	43 75	43.25	....	....	....	....	....	....	43.50	....	43 75	43 63	167
Cambria Steel	"	50	21.75	21.38	21.50	21 38	21 75	21.50	21 88	21.63	21.88	21.63	22.00	21. 0	9,761
Susq. I & S.	"	10	....	....	....	....	....	....	....	....	....	....	....	....	....
United Gas I	"	50	156	154¾	157	155¾	12 ¾	21¾	12 84	94	121	20	121	120⅝	4,44

Total shares sold, 2,.32. * Reported by Townsend, Whelen & Co., 309 Walnut St, Philadelphia

SAN FRANCISCO, CAL.

NAME OF COMPANY.	Location.	Par value.	Mar. 22	Mar. 23.	Mar. 24.	Mar. 26.	Mar. 27.	Mar 28
Belcher	Nev.	$3 00	.33	.33	.32	.33	.33	.31
Best & Belcher	"	3 00	.41	.39	.35	.36	.35	.35
Caledonia	"	3 00	1 06	.85	.90	.90	.85	.84
Challenge Con	"	3 00	.26	.26	.24	.25	.24	.22
Choliar	"	3 00	.23	.23	.22	.21	.18	.19
Confidence	"	3.00	.8	.82	.75	.80	.85	.78
Con. California & Virginia	"	2 50	1 70	1.65	1.55	1 55	1 55	1 55
Crown Point	"	3.00	16	17	.15	.20	.20	.19
Gould & Curry	"	3 00	16	24	23	.22	.22	.21
Hale & Norcross	"	3 00	.27	.23	.28	.25	.20	.25
Justice	"	2 00	.13	10	11	.10	.08	.07
Mexican	"	3 00	.28	2	.25	.25	.28	.24
Occidental Con	"	3.00	.16	15	.5	.15	13	.12
Ophir	"	3.00	.87	.84	.82	.79	.78	.79
Potosi	"	3 00	.23	.22	21	.20	.19	.18
Savage	"	2.50	.16	17	.16	16	.18	.19
Sierra Nevada	"	3 00	59	57	.55	.53	51	.54
Standard Con	Cal.	10.00	3.00	2.50	2 5.	2.60	2 90	3.10
Union Con	Nev.	2 50	.23	23	.21	.19	.17	.18
Utah Con	"	1.00	11	10	10	10	.12	.09
Yellow Jacket	"	3 00	.18	.18	.18	16	16	.15

CALIFORNIA OIL STOCKS.*

Name of Company.	No. of shares.	Par Val.	Mar. 5 H.	Mar. 5 L	Mar. 6. H.	Mar. 6. L	Mar 7. H.	Mar 7. L	Mar 8. H.	Mar 8. L	Mar 9. H.	Mar 9. L.	Mar.10 H.	Mar.10 L.	Sales
Blue Goose	.....	.....	25.00	....	25.00	....	25 00	....	21.00	20 00	20 0	....	....	....	20
Burlington	100,000	$1.00	1.05	....	1 05	1.00	1.05	1.00	1.05	1.0	1.05	....	....	....	....
Caribou	100,00	1.00	.85	....	.83	.80	.80	.75	.85	.75	.85	.75	....	....	300
Chi l me Valy	.....	.....	.00	....	10 00	....	10.00	....	10.0	....	10.01	....	....	....	....
Dominion	.....	.....	4	....	....	....	.45	....	.45	....	.42	....	....	....	....
Home	.....	.....	3 65	3.60	3 6.	....	3.6	3 60	3 6	3 60	3 6.	3.60	....	....	1,025
National	100,000	5 00	6 25	....	6 50	6.25	6 25	6.00	6 25	....	6.2	....	....	....	....
New Hope	.....	.....	7	.70	.75	.70	75	.70	7.	....	....	....	....	....	....
Petroleum	100,000	1 00	.40	....	.40	....	.40	....	.40	....	.41	....	....	....	....
San Luis	.....	.....	5.375	....	5 375	....	5.375	....	5 375	....	5.3 5	....	....	....	....
Shamrock	.....	.....	1.25	....	1.25	....	1.25	....	1 25	....	1.25	....	....	....	....

* California and Producers Oil Exchanges. Total sales, 1,555 shares.

BOSTON, MASS.†

NAME OF COMPANY.	Par val.	No. of shares.	Mar. 22. H.	Mar. 22. L.	Mar. 23 H.	Mar. 23 L.	Mar. 24. H.	Mar. 24. L.	Mar. 26. H.	Mar. 26. L.	Mar. 27 H.	Mar. 27 L.	Mar. 28. H.	Mar. 28. L.	Sales
Adven'u'e,Cons	$25	100,000	4.50	....	4 00	....	4.50	4.25	4.50	....	4.25	....	4.50	....	200
Aetna, Cons. g	5	100 000	....	....	*3.00	....	....	....	....	....	....	....	....	....	100
Allouez	25	80,000	1.50	....	....	....	....	....	....	....	1.50	....	1.50	....	695
Amal Cop	10	750,000	96 38	95.75	....	....	.93	....	95 00	94.50	97.00	96.00	97 25	96 00	2,779
Am. Z. L. & S.	25	60,000	14.00	13.00	15 50	14.00	15 00	....	15 0	....	15.00	....	16.75	15 50	1,276
Anaconda	25	1,20,000	....	....	....	....	....	....	....	....	47 00	....	48 00	47.50	135
Arcadian, c	25	150,000	18 50	18.00	17.50	17.0	17.75	17.25	19 00	18.00	20 00	19 0	21.88	19.75	4,713
Arnold, c	25	60,000	....	....	....	....	....	....	....	....	5.88	5.50	6.00	5.88	850
Ashbed	25	40,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Atlantic, c	25	40,000	24.5	....	22 0	....	....	....	....	....	22 0	....	24.00	....	385
Baltic, c	25	100,000	20.00	19 75	2. 25	....	20.25	....	21.75	20.50	2 00	20.25	23 00	21 50	1,650
Bingham, c. g.	10	190,000	10 75	....	10.75	....	11 00	10.75	11 75	10 75	12 50	11.75	13 00	12.00	8,410
Bonanza, Dev.g	10	300,000	....	....	1.13	....	....	....	1 25	....	1 38	....	1.25	....	850
Boston, q	10	10',000	....	....	....	....	....	....	....	....	....	....	....	....	....
Boston&C C	2	200,000	.1	....	....	....	....	....	....	....	....	....	.13	....	2,000
Bos. & Mon,Tr R	25	150,000	299	298	299	....	307	300	315⅜	309	317	313	320	317	1,361
Breece	2.	20',000	....	....	....	....	....	....	....	....	....	....	....	....	....
British Col.	5	200,000	....	....	....	....	....	....	....	....	9 75	9 25	10.00	....	320
Butte & Bost., c	10	200,000	64 00	63.00	64.00	63 50	65.00	....	70.00	68.50	72.00	69.00	72 00	70 50	2,947
Cal. & Hecla, c	25	100,000	745	....	....	....	740	....	742	740	745	740	750	745	70
Centennial, c	10	300,000	18 75	18 2	18.50	18 0	19.25	18.50	2.50	19.50	20 00	19.75	22.75	0.00	8,821
Cent'l-Eureka	25	90,000	24.50	24 00	2. 00	24 25	25 50	25 00	26 00	25 50	26 5	25.50	28 63	27.50	3,775
Central Oil	25	100,000	....	....	15 75	....	....	....	....	....	17 00	....	17 0.	....	85
Cochiti, g	25	60,050	11.88	11.50	11.88	11.00	11 00	....	11.50	....	11 75	11.00	12.00	11.38	2,396
Cont Zn.Mg&Sm	10	157,000	....	....	3 00	2 75	2.75	....	2.75	....	....	....	....	....	235
Copper Range	10	110,000	....	....	22.00	23.5	....	....	....	....	....	....	28.00	22.00	335
Dominion Coal	25	100,000	43 88	42 0	45.00	44.00	44.25	....	46.00	43.50	47.00	45 50	47.0.	46.25	9,646
do. pref	100	150,000	115	....	.15	....	115	....	115	....	....	....	115	....	73
Elm River	100	20,000	....	....	....	....	....	....	....	....	....	....	4 50	4.00	1,720
Federal Steel	12	100,00	52 50	51.18	51.50	50 75	51.25	....	52 50	51.50	54.25	52.50	54.50	54 00	5,684
do. pref	100	464,843	76.0.	....	....	....	....	....	76 00	75.88	76.50	75 25	76.00	75 50	300
Franklin, c	100	532,610	....	....	....	....	14.75	....	15.50	15.25	15.5	....	16.50	15 50	770
Gold Coin	25	100,000	....	....	15	....	....	....	....	....	1.	....	.12	....	540
L royal Con. c.	25	100,000	....	....	25.25	....	....	....	28.25	27.50	28.00	27.50	29.50	27.50	3,141
Mass. Con	25	100 000	6.25	....	....	....	6 50	6 25	....	....	6.25	....	6 25	....	705
Mayflower	25	10',000	3 00	2.50	2.7.	2 50	2.75	....	3.00	....	3 00	2.88	3.00	....	1,740
Melones	10	167,577	2.00	1 63	2.13	2.00	....	....	....	....	....	....	....	....	1,469
Merced, g	15	100,000	....	....	....	....	....	....	6 00	....	6.00	....	6.00	....	425
Michigan	25	100,000	....	....	....	....	....	....	4.50	....	4 5.	....	4 50	....	260
Mohawk, c	25	100,000	14.50	14.25	14.00	13.75	14 38	13.75	15.00	14.50	15 00	14.75	15.0	15.00	1,776
Montana C & C	5	100,000	7.00	....	....	....	....	....	8.00	8.00	8.00	8.00	9.25	8 50	1,815
N.A.Gold Dre'g	10	100,000	....	....	....	....	....	....	....	....	....	....	....	....	....
Old Colony, c	25	100,000	3.00	....	3.00	....	3.00	....	3 25	3 13	3.25	....	3.50	3.13	1,931
Old Dominion, c	25	130,000	16.0.	....	16.50	15 50	16.00	.7 25	16 00	17.75	17.50	17 0.	17 88	1,808
Osceola, c	25	93,000	67 25	66.00	6s 50	67.0	....	....	70 00	68.00	71 0.	70 0	71.75	70.00	1,012
Parrot, s c	10	229,850	46.0	45.50	46.00	45.63	46.50	46.00	47 75	46 .0	48.00	47.25	49.50	48.00	2,966
Pioneer, q	10	100,000	1.00	....	1.00	....	....	....	....	....	....	....	....	....	200
Quincy, c	25	100,000	....	....	....	....	135	132¾	135	....	140	....	....	....	115
Rhode Island	25	100,000	4.00	....	....	....	4 00	....	4 50	4.0	4 00	....	4.25	....	303
Santa Fe, g, c	10	250,000	....	....	5.50	....	....	....	6.00	....	6 00	....	7.00	6 00	930
San. Ysabel, g.	5	130,000	....	....	1 25	1.13	1.38	1.60	1 25	....	1 38	1.25	1 2.	....	2,770
Tamarack, c	25	60,000	187	....	187	....	....	....	190	188	190	....	192⅜	190	250
Tecumseh	25	80,0.	....	....	....	....	....	....	....	....	....	....	....	....	....
Tri Mountain	25	100,000	8.00	7.50	8.00	....	....	....	8.50	8.0.	8.50	8 25	8.75	8.50	1,470
Union C. L.	25	80,000	....	....	3 00	2.00	....	....	....	....	4 50	....	....	....	170
U. S. Oil	25	100,000	....	....	20.00	8 5.	....	....	19.50	18 0.	19.63	8 50	20 75	19.75	2,289
Utah Cons,g. c	5	3 0,000	30.50	30 00	30.00	....	....	....	31.00	30.5.	32.00	31.00	34.00	32.00	4,762
Victor, g	5	200,000	....	....	2.00	....	....	....	2 75	....	....	....	....	....	3.0
Victoria	25	100,00.	....	....	....	....	2.75	2.5.	2.75	....	2 75	2.50	3.00	....	350
Washington	25	40,000	....	....	....	....	....	....	4.00	....	....	....	....	....	100
White Knob	100	5.,0.0	30.00	....	....	....	....	....	....	....	31 00	....	30 00	....	395
Winona, c	25	10',000	....	....	....	....	....	....	....	....	2 75	....	....	....	10
* Wolverine, c	25	60,000	....	....	39 25	39.00	40 00	....	40 00	39.75	39.75	....	40.50	40.00	896
Wyandotte	25	100,0 0	1 25	1.00	....	....	....	....	.50	1 25	....	....	1 38	....	545

† Official quotations Boston Stock Exchange. Total sales, 91,690. *Ex-dividend.

SALT LAKE CITY, UTAH.

Mar. 24.

STOCKS.	Shares	Par val.	Bid.	Asked.	STOCKS.	Shares.	Par val.	Bid.	Asked
Ajax	300,000	$10	$0.48	$0.55	Horn Silver	400,000	$25	$1.36	$1 70
Alice	400,000	25	30	65	Joe Bowers	700,000	1	.05¾	.06⅝
Buckeye	500,000	1	.01¾	05	Joe Bowers Ext.	4.0,000	¼	02⅜	.03
Bullion-Beck & Ch.	100,000	10	2.95	3 75	Little Pittsburg	400,000	5	.0. ⅝	02⅜
Centennial Eureka	200,000	25	24.50	25.75	Lower Mammoth	150,000	1	49	.49¾
Chloride Point	500,000	1	.06¼	.09⅜	Mammoth	400,000	5	2 02¾	2.09¾
Daisy	500,000	3	00¾	.00⅝	May Day	400,000	⅝	1 08¾	1.09
Dalton	500,000	5	....	....	Mercur	200,000	25	5 47½	5.65
Dalton & Lark	2,500,000	1	....	....	Northern Light	400,000	5	.07	.07⅜
Daly	150,000	20	1.38¾	1.50	Ontario	150,000	100	8.75	9.20
Daly West	15.,000	20	17 20	18 00	Richmond-An	500,000	1	....	....
Dexter	200,000	5	....	1.50	Sacramento	1,000,000	5	.19	.21
Eagle	....	....	.06¾	08	Silver King	150,000	20	50 50	....
Eagle & Blue Bell	250,000	1	70	1.00	Silver Consolidat'd	500,000	1	.09	.14½
Four Aces	250,000	1	01¾	....	Sunbeam	250,000	1	.02	.05
Galena	100,000	10	.15	.20	Sunshine	250,000	10	15⅜	....
Geyser-Marion	300,000	5	04	10	Swansea	100,000	5	3 61⅜	3.70
Golden Eagle	400,000	1	.02⅝	.03	South Swansea	150,000	1	1 25⅜	1 27
Grand Central	250,000	1	5 65	5 80	Utah	100,000	1	.40	.70
Homestake	400,000	1	....	....	Valeo	200,000	10	....	.70

TORONTO ONT.

NAME OF COMPANY.	Par val.	Mar. 19 B.	Mar. 19 A.	Mar. 20 B.	Mar. 20 A.	Mar 21. B.	Mar. 21. A.	Mar. 22. B.	Mar. 22. A.	Mar. 23. B.	Mar. 23. A.	Mar. 24. B.	Mar. 24. A	Sales
Ontario:														
Alice A	$1	.08	.05	.03½	05	.03	.04	.03	.04	03	04	....	....	.....
Bullion

STOCK QUOTATIONS.

COLORADO SPRINGS, COLO.‡

NAME OF COMPANY.	Par val	Mar. 17. B.	Mar. 17. A.	Mar. 19. B.	Mar. 19. A.	Mar. 20. B.	Mar. 20. A.	Mar. 21. B.	Mar. 21. A.	Mar. 22. B.	Mar. 22. A.	Mar. 23. B.	Mar. 23. A.	Sales.
Acacia	$1	.80½		.83½	.84½	.84	.84½	.82½	.83½	.82½	.83½	.82½	.83½	48,951
Alamo	1	.17	.17½	.17	.17½	.17	.17½	.17		.16½	.16			5,500
Am. Con	1	.05½	.06	.05½	.06½	.05½	.06½	.05½	.06½	.05½	.06½	.06½		5,000
Anaconda	1		.39½	.38	.39½	.37	.39	.35	.39	.35½	.39	.35	.39	4,000
Anchor	1		.03½		.03½	.03½		.03½	.03½	.03½	.03½	.03	.03½	6,000
Anchorial	1	.94		.94		.94		.94		.94		.94		
Antelope	1	.03½	.03½	.03½	.03½	.03	.03½	.03	.03½	.03	.03½	.03½	.03½	15,000
Aola	1	.05½	.05½		.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	.05½	8,000
Arcadian	1		.06½	.06½	.06½		.07½		.07		.07		.07½	3,000
Arg'ntum J	1	.18	.19	.18½	.19	.18½		.18	.19	.18		.18		2,500
Banner	1	.04½	.04½	.04½	.04½	.04½	.05½	.04½	.04½	.04½	.04½	.04½	.04½	1,000
Battle Mt.C.	1	.33½	.35	.33½	.33½	.33½	.34½	.32½	.34½	.32½	.33	.33	.33	2,000
Ben Hur	1		.07½	.07½	.07½	.07½	.07½	.07½	.07½	.07	.07½	.06½	.06½	3,000
Black Bell	1	.14½	.15		.15½		.14½	.13½	.14½		.13½	.12½		2,000
Blue Bell	1	.14		.14	.15	.13½	.14	.14	.15	.13	.14	.13	.14	1,000
Bob Lee	1	.05	.15½	.05½	.05½	.03½		.05½	.05½	.05½	.05½	.04½	.05½	1,000
Buckhorn	1	.06½	.07	.06½	.07	.06½	.07	.06½	.07	.06½	.07	.06½	.06½	9,700
Cadillac	1	.02		.02	.02½	.02	.02½	.02	.02½	.02	.02½	.02	.02½	7,000
Central C'n	1			.06½		.06½		.06½	.07½	.07	.07½	.06½	.07½	
Champion	1	.07½	.07½	.07½	.07½	.07½	.07½		.07½	.07½	.07½	.07	.07½	6,000
Chicolo	1	.03½	.04	.03½	.04	.03½	.03½	.03½	.04	.03½	.03½	.03½	.04	5,000
C.K.&N	1	.02½	.02½	.02½	.02½	.02½	.02½	.02½	.02½	.02½	.02½	.02 ½	.02½	20,000
C.C.Col'bia	1	.10½	.10½	.10	.10½		.09½	.09½	.09½	.09½	.09½	.09½	.09½	13,000
C.C G.Ext.	1	.09½	.10½		.11	.09½	.10		.10		.10		.10	6,500
C.C. & Man.	1	.13½	.13½	.13½	.14	.13½	.13½	.13	.13½	.11½	.11½	.11½	.12	86,091
Copper Mt.	1	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06½	9,000
Creede&CC	1	.15½	.15½	.15½	.15½	.14½	.15½	.15	.15½	.14½	.15	.14½	.14½	15,000
C. C. Con	1	.14½	.15	.14	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.14½	.15	40,000
Dante	1	.17½	.18	.17	.17½	.17	.17½	.16	.16½	.16½	.16½	.16½	.16½	154,000
Des Moines	1	.0[illegible]	.05½	.06	.06½	.06	.06	.06½	.06½	.06½	.06½	.06½	.06½	1,000
Eclipse	1	.08½	.08½	.06		.08½	.08½			.0838	.08½	.08½	.08½	11,000
ElktonCon	1	1.17	1.19	1.17½		1.17	1.19	1.16½	1.17	1.1525	1.16	1.16	1.16½	12,300
El Paso G.	1	.38	.38½	.38½	.39	.39½	.40	.40	.40½	.40		.40	.40½	12,000
Enterprise	1	.23		.23½	.25½	.22½	.24	.22	.23	.20	.2188	.20½	.21	6,005
F.Rawlings	1	.30		.30		.30		.30		.31½	.35			2,600
Favorite	1	.06	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06	.06½	.06	.06½	54,000
Findley	1	.19½	.19½	.19½	.20	.19½	.19½	.17½	.16	.16½	.16½	.16½	.16½	177,900
Garf. Con	1	.16½	.17	.16½	.16½	.16½	.17	.16½	.16½	.1688	.17	.16½	.17	21,500
Golden Fl	1	.29	.31	.30		.29½	.31	.29	.32½	.29		.21	.32	1,775
Gold Hill	1	.02½	.03½	.02½	.03	.02½	.03½	.02½	.03	.02½	.03	.02½	.03	6,000
Gold.Sov'n.	1		.13½		.13	.12½	.12½	.12½	.13½	.12½	.12½	.12½	.14½	61,001
Hayden	1	.02½	.02½	.02½	.03½	.02	.0225	.02	.02½	.02	.02½	.0-		2,000
Ida May	1	.27	.27½	.26½	.28½	.28	.28½	.28	.2-	.27	.28	.26½	.23½	6,000
Independce	1	.70	.70½	.70½		.71½	.71½	.72½	.74	.74½	.75	.74	.75	13,700
Ing. Con	½	.22	.22½	.21½	.22½	.21½	.21½	.2-½	.21½	.2188	.22	.21½	.21½	123,500
Isabella	1	1.27½	1.28½	1.26½	1.27½	1.26½	1.27	1.26½	1.27	1.27	1.27½	1.27½		82,700
Jack Pot	1	.59½	.60½	.6 ½		.60½	.61	.60	.61	.59½	.61	.59½	.60	11,800
Josephine	1	.02½	.03½	.02½	.03½	.03½		.02½	.03½	.02½	.03½	.02½	.02½	2,000
Key West	1	.05	.05½	.04½	.05	.04½	.05	.04½	.0458	.04½	.04½	.04½	.05	11,500
Lexington	1	.19½	.19½	.19	.19½	.18½	.18½	.17	.17½	.18½	.18½	.18½	.19	89,500
Magnet R	1	.04	.04½	.04½	.04½	.04	.04½	.04	.04½		.04½		.04	34,000
Margaret	1	.03½	.03½	.03½	.03½	.03	.03½	.03½	.03½	.03	.03½	.0288	.03½	3,000
Margery	1	.04½	.04½		.0488	.03½	.04½	.04½	.04½	.04½	.0488	.04½	.04½	10,000
Matoa	1	.26½		.26	.30	.26½	.30	.26				.25½	.27	
Midway	1	.07½	.07¾	.07½	.07½	.07½	.07½	.07¾	.07½	.07½	.07½	.07½	.07¾	14,000
M. J. T.	1	.04	.0425	.04½	.04½	.04	.04½	.04½	.04½	.04½	.04½	.04½	.04½	3,000
Mobile	1	.03½		.03½	.03½	.03½	.0388	.03½	.03½	.03½	.03½		.0-½	10,500
Moll.Dwyer	1	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.0-½	14,000
Mollie Gib.	1	.21	.26		.27	.22½	.23	.22½		.22½			.25	
Monarch	1	.16½	.17	.16½	.1888	.16½	.1883	.16½	.16¾	.16½	.1688	.1672	.17	28,000
Montreal	1	.06½	.06½	.06½	.07		.07		.07		.07	.07		
Moon-A'e'r	1	.74½	.75	.74	.74½	.74	.74½	.74	.71½	.73½	.75	.73½	.74½	15,800
Morning S	1	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04	.04	.04½			8,000
Mtn.Beauty	1	.10	.10½	.0988	.10	.09½	.10	.12½	.12½	.11	.11½	.10½	.10½	158,500
Mt Rosa	1	.75	.84	.75	.80	.74	.76½	.70	.75	.71½	.77	.72½	.85	2,000
National	1	.10	.10½	.10½	.10½	.10½	.10½	.10	.10½	.16½	.10½	.09½	.10½	46,000
Nellie V	1			.12½	.2-	.11½	.12		.12	.11½	.12	.11½	.1189	21,000
New Haven	1	.0888	.09	.0888	.09	.09½	.09	.08½	.08½	.08½	.08½	.08½	.08½	47,000
OliveB'nch.	1	.08½	.08½	.08½	.08½	.08½	.08½	.08½	.08-	.07½	.08½	.08	.08½	8,000
Oriole	1	.0488	.0525		.05½		.05	.05	.05½	.04½		.04½	.05	15,900
Orphan	1	.22½	.23		.22½	.22	.22½	.22	.22½		.22½	.21	.22½	1,000
Pelican	1	.0288	.03	.02½	.03½	.03	.03½			.02½		.02½	.03	6 000
Pharmacist	1	.13½		.14½	.15	.13½	.14½	.13½	.13½	.13½	.13½	.13½	.14	25,000
Pilgrim	1	.13½	.13½	.13	.13½	.13	.13½	.12½	.13½	.13	.13½	.13	.13½	6,0 0
Pinnacle	1	.22½	.23	.22½	.22½	.22	.22½	.22	.22½	.21½	.22	.21	.21½	35,500
Portland	1	2.42	2.45		2.48	2.44					2.47	2.42½	2.47	12,700
Prince Alb.	1	.05½	.03½	.05½	.0- ½	.06½	.16	.05½	.05½	.05	.05¼	.04½	.05	11, 00
Princess	1		.06		.05½		.06	.05½	.05½	.05½	.0- ½	.05	.05½	5,000
Progress	1		.09	.06	.09		.09½		.09		.09	.06½		9,000
Pythias	1	.06½	.07½	.06½	.07½	.07	.07½	.06½	.07		.07½	.06½		3,000
Raven	1	.75	.77	.76½	.77	.74	.75	.70½	.71	.72	.74½	.72½	.76	33,700
Republic	1	.06½	.06½	.06½	.06½	.06½	.06½	.06½	.06¾	.06½	.06½	.06½	.06½	3,000
Rob'tBurns	1	.05½	.06	.05½	.06	.05½	.06	.05½	.06	.05½	.06			5,000
Rose Maud	1	.12½	.15½		.12½	.12	.12½	.12	.12½	.11½	.12	.11½	.12	14,000
Rose Nicol	1	.13½	.13½	.13½	.14	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	25,500
Silver Gold	1	.01¼	.01¾	.01¼	.01½	.01		.01		.01¼	.01½	.01½	.02	5,000
Specimen	1	.10½	.10½	.09½	.10	.09½	.06¾	.09½	.10½	.09½	.09½	.09½	.10	27,000
Tornado	1			.50	.51	.47	.49	.47	.48	.49	.49½	.49½	.50	16,700
Touraine	1	.06	.06½	.05½	.06½	.05½	.06½		.06½		.06½		.06½	2,000
Trachyte	1	.06½	.07	.06½	.07½	.07	.07½		.07½	.06½	.07	.06½	.07	4,000
Uncle Sam	1	.05½	.06	.05½	.05½	.05½	.05½		.06	.05½	.05½	.05	.05½	7,000
Union	1	.49½	.50	.28	.50	.49½	.49½	.49	.49½	.49½	.49½	.50	.49½	195,91-
Vindicator	1		1 57		1 57	1.50	1.55	1.57				1.55	1.55	1,500
Work	1	.36½	.36½	.36½	.37	.36	.36½	.35½	.35½	.34½	.35½	.34		47,50-
Zenobia	1	.16½	.16½		.16½	.16	.16½		.16		16	.16		5,00

‡ Colorado Springs Mining Stock Exchange. Total sales, 2,039,047 shares.

MONTREAL, CANADA.*

NAME OF COMPANY.	Par Val	Week. Mar. 26. H.	L.	Sales.	NAME OF COMPANY.	Par Val	Week. Mar. 26. H.	L.	Sales.
Big Three	$1	.09	.07½	20,950	Monte Christo	$1	.05	.02½	500
California	1	.10	.08½	1,200	Montreal G. F.	1	.07	.05	2,100
Can. Gold Fields	0.10	.07	.06		Montreal-London.	0.24	.31	.27	6,600
Decca	1	.10	.03½	48,100	Okanogon	1	.03	.02	2,500
Deer Trail Con	1	.12	.06	56,800	Payne	1	1.34	1 27	14,500
Giant	1	.02½		5,000	Rambler-Cariboo	1	.25	.16	
Golden Star	1	.30	.14	1,000	Republic Con	1	1.10	1.03	4,806
Gold Hills Dev	1	.06	.04	2,500	Slocan-Sovereign	1	.33	.28	1,900
Knob Hill	1	.60	.40	20,000	Virtue	1	1 00	.98	18,150
Majestic	1								

*Montreal Stock Exchange. Total sales, 206,806 shares.

MEXICO.

Mar. 17.

NAME OF COMPANY.	No. of shares.	Last div'd.	Prices. Op'g.	Prices. Cl'g.	NAME OF COMPANY.	No. of shares.	Last div'd	Prices. Op'g.	Prices. Cl'g.
Durango:					Hidalgo:				
Barradon y Cab	2,400		$40	$40	Real del Monte	2,554	10.00	506	500
Candelaria de Pan.	1,200		20	20	San Francisco Ho	6,000	3.00	195	170
Capusaya Guan	2,400		30	30	Soledad	960	5.00	330	280
Restauradora	10,000		20	20	Sorpresa	960	7.50	260	300
Guanajuato:					Union Hacienda	2,000	5.00	320	300
Angustias	2,400	5.00	288	255	Mexico:				
Cinco Senores y An	2,000	15.00	370	360	Coronas	500		75	75
Guadalupe Hacie'a	10,000	2.00	220	200	Esperanza y An	3,000	10.00	1,560	1,500
Trinidad, aviadora.	2,000		10	6	Michoacan				
do. aviada	400		15	10	Luz de Borda ava	4,000		22	18
Zona Minera de Pos	2,400		20	15	S. Luis Potosi:				
Hidalgo:					Concep. y An	2,400		220	190
Amistad y Concordia	9,600	1.47	25	23	Zacatecas:				
Arevalo	720		200	200	Asturiana y An	2,500	10.00	205	175
Bartolome de Med.	2,000	2.00	65	70	Cabezon	2,400		15	15
Carmen	1,100	7.75	250	260	C'delar. de Pinos	2,500		250	240
Luz Oa Maravillas	800		120	100	Palma de Somb.	2,400		80	40
Pabellon	800	27.89	30	20					

DENVER, COLO.‡

NAME OF COMPANY.	Par val.	Mar. 17. B.	Mar. 17. A.	Mar. 19 B.	Mar. 19 A	Mar. 20. B.	Mar. 20. A.	Mar. 21. B	Mar. 21. A	Mar. 22. B.	Mar. 22. A.	Mar. 23 B.	Mar. 23 A.	Sales.
Acacia	1	.80½	.81	.88	.882			.83		.81½	.82½			3,000
Amer Gold	1	.009	.01	.009		.009	.01		.01		.01½		.01	6,000
Bankers	1	.16½	.17½	.16½	.172	.17	.172			.17				
C.C.sullion	1	.02½	.02½			.02½	.022	.022	.02½	.022		.02	.022	8,000
Cr. & Cr. C	1			.15½		.15	.15½			.15				
Dictator	1		.03½	.03½	.03½		.03½					.03½		1,000
Favorite	1			.05½	.06	.06	.06½	.06½					.03	2,000
Granite H	1	.06½	.07	.06½										1,000
Ironclad	1	.05½	.06½	.05½	.06½	.05½								
Isabella	1	1.28	1.30	1.27	1.27½	1.26½	1.28	1 26½		1.26	1.30		1.27½	300
Keystone	1	.19½				.19½	.20	.19	.19½	.19				2,000
Lexington	1					.19½		.17	.18	.16		.18½		
Mt Beauty	1							.11	.11½	.11½		.11		2,000
Mutual	1	.05	.05½	.05½	.05½	.05½	.05½					.05½	.05½	4,000
New Haven	1	.08½	.09	.08½	.09½	.08½	.08½	.08½	.08½	.08½	.08½	.06½	.06½	
New Zeal'd	1	.41		.41	.50			.41						1,000
Pilgrim	1	.00[illegible]	.009	.007		.007½	.008			.005	.01			1,000
Pinnacle	1	.21½	.22½											
Puritan	1	.01	.02		.02	.01½	.01¾	.009						1,000
Raven	1	.75		.76		.74						.74½	.75½	600
Union	1					.49½	.49¾			.49½	.50	.49	.50	
Vindicator	1	1.52	1.55	1.54	1.57									5,000
Wire Gold	1	.01½	.01¾	.01¼	.01¾			.01¾	.01¾					1,000
Work	1	.36¼	.36¾	.36½	.36¾			.36½	.36	.36½	.35	.35¾	.34	4,000

‡ Official Quotations Denver Stock Exchange. Total sales, 41,800 shares.

PARIS.

Mar. 8.

NAME OF COMPANY.	Country.	Product.	Capital Stock.	Par value.	Latest divs.	Prices. Op'ning	Prices. Closing.
			Francs.	Fr.	Fr.	Fr.	Fr.
Aciéries de Creusot	France	Steel mfrs	27,000,000	2,000	75.00	1,980.0	1,975.00
" " Firminy	"	" "	3,000,000	500	125.00	3,750.00	3,780.00
" " Fives-Lille	"	" "	12,000,000	500	85.00	590.0	570 00
" " Huta-Bank	Russia	Iron & steel		500		4,580.0	4,560.00
" " la Marine	France	Steel mfrs	20,000,000	500	50.00	1,585.0	1,871.00
Anzin		Coal			220.00	7,280.00	7,240.00
Boleo	Lower Cal.	Copper		500	1.07	3,0 0.0	3,070.00
Briansk	Russia	Coal & Iron		500		1,813.75	1,293.00
Champ d'Or	S. Africa	Gold		25	8.75	40.50	38.00
Courrieres	France	Coal	600,000	500	70.00	3,160.00	3,200.00
Dombrowa	Russia	Coal		500	12.50	1,125.00	1,115 00
Donetz		Steel				1,200.00	1,205.00
Dynamite Centrale	France	Explosives		500	20.00	470.00	469.00
Escombrera-Bleyberg	Spain	Lead		500	35.00	1,350 00	1,345.00
Fraser River	Brit. Col'mb	Gold		25		7.75	8.25
Huanchaca	Bolivia	Silver	40,000,000	125	5.00	111.00	120.50
Laurium	Greece	Zinc & lead	16,900,000	500	30.00	610.00	605.00
Malfidano	Italy	Zinc	12,500,000	500	50.00	1,390.00	1,370.00
Metaux, Cie. Fran. de	France	Metal d'lers	25,000,000	500	30.00	389.00	385.00
Mokta-el-Hadid	Algeria	Iron	15,312,500	500	40.00	1,220.00	1,220.00
Napthe Baku	Russia	Petroleum				824.00	829.50
Napthe, Le	"	"				1,800.00	1,800.00
Napthe Nobel	"	"				722.00	711. 0
" " parts	"	"				14,525.00	14,500.00
Nickel	N.Caled'nia	Nickel	10,000,000	250	10.00	51.00	50 00
Penarroya	Spain	Coal, etc		500	65.00	2,945.00	2,910 00
Rebecca	Colo'do,U.S.	Gold, etc	5,000,000	25		5.75	5.75
Salines de l'Est	France	Salt		500	6.50	220.00	225.00
Salines du Midi	France	" etc		500	25.00	995.00	975.00
Vielle Montagne	Belgium	Zinc	9,000,000	80	56.00	830.50	832.50

LONDON.

Mar. 13.

NAME OF COMPANY.	Country.	Authorized capital.	Par value.	Last dividend. Amt.	Last dividend. Date.	Quotations. Buyers	Quotations. Sellers.
				£ s. d.		£ s. d.	£ s. d.
Alaska Goldfields	Alaska	£300,000	1 0 0	2 1	Mar., 1899	18 0	16 3
*Alaska-Mexican, g	"	200,000	1 0 0	0 4.8	Jan., 1900	15 0	17 6
*Alaska-Treadwell, g	"	1,000,000	5 0 0	1 6	" "	5 2 6	3 5 0
Anaconda, c., s	Montana	6,000,000	5 0 0	8 2	Apr., 1900	10 1 3	10 3 9
Chiapas, g., s., c	Mexico	252,500	1 0 0			5 0	7 0
De Lamar, g., s	Idaho	400,000	1 0 0		May, 1899	3 6	4 6
Golden Gate, g	Colorado	87,500	1 0 0	2 0	June, 1898	1 0	2 0
Grand Central, g., s	California	80,000	1 0 0			1 0	2 0
Hall Mines, c., s	Mexico	300,000	1 0 0	2 0	Jan., 1900	1 1 3	1 3 9
Le Roi, g	British Col.	250,000	1 0 0	1 0	May, 1899	1 1	2 0
Lillie, g	"	1,000,000	5 0 0	5 0	Nov., 1899	4 16 3	4 18 9
Montana, g., s	Colorado	250,000	1 0 0	2½	Mar., 1900	15 0	1 0 0
Newfoundland	Montana	660,000	1 0 0	6	Apr., 1899	4 0	5 0
Palmarejo & Mexican, g., s	Newfoundland	250,000	1 0 0			7 6	12 6
Stratton's Independence	Mexico	800,000	1 0 0			1 6	2 0
Copiapo, c	Colorado	1,100,000	1 0 0	2 0	Mar., 1900	2 15 0	2 17 6
Frontino & Bolivia, g	Chile	200,000	2 0 0	4 0	Dec., 1899	4 2 6	4 7 6
St. John del Rey, g	Colombia	140,000	1 0 0	1 6	Oct., 1899	1 17 6	2 0 0
UtahCon. g(HighlandBoy)	Brazil	600,000	1 0 0	1 0	Dec., 1899	1 0	1 2 6
Velvet, g	Utah	800,000	1 0 0	rts.	Mar., 1898	6 7 6	6 12 6
Ymir, g	BritishCol'mbia	100,000	1 0 0			1 0 0	1 5 0
British Am. Corp	"	200,000	1 0 0	1 0	Nov., 1899	1 7 6	1 10 0
Linares, l	Spain	1,500,000	1 0 0	rts.	Dec., 1898	17 9	18 3
Mason & Barry, c., sul	Portugal	45,000	5 0 0	15 0	Mar., 1900	9 0 0	10 0 0
Rio Tinto, c	Spain	420,000	2 0 0	5 0	May, 1899	4 10 0	4 15 0
" " pref	"	1,625,000	5 0 0	1 15	Nov., 1899	54 10 0	54 15 0
Tharsis, c	"	1,625,000	5 0 0	2 6	" 1899	5 17 6	6 0 0
Assoc. Gold Mines	W. Australia	1,250,000	2 0 0	11 0	May, 1898	10 2 6	10 7 6
Broken Hill Prop., s	N.S. Wales	500,000	1 0 0	1 6	Jan., 1900	5 3 9	5 5 0
Great Boulder Prop	W. Australia	884,000	1 0 0	1 0	Jan., 1900	2 5 3	2 6 3
Hannan's Brownhill, g	"	1,750,000	2 0 0	4	Dec., 1899	1 17 9	1 18 9
Ivanhoe Gold Corp	"	110,000	1 0 0	5 0	Jan., 1900	9 7 6	9 12 6
Kalgurlie, g	"	1,000,000	5 0 0	5 0	Jan., 1900	13 15 0	13 15 0
Lake View Consols, g	"	120,000	1 0 0	rts.	Feb., 1899	8 2 6	8 7 6
Mt. Lyell M. & R., l., c	Tasmania	250,000	1 0 0	10 0	Feb., 1900	13 3 9	13 6 3
Mt. Morgan, g	Queensland	975,000	3 0 0	5 0	Apr., 1900	10 2 6	10 7 6
Waihi, g	New Zealand	1,000,000	1 0 0	7	Feb., 1900	5 0 0	5 2 6
Champion Reef, g	Colar Fields	320,000	1 0 0	2 6	Mar., 1900	9 15 0	10 0 0
Mysore Gold, g	"	220,000	10	5 0	Jan., 1900	5 13 9	5 16 3
Nundydroog, g	"	250,000	10	4 6	Nov., 1899	6 1 3	6 3 9
Ooregam, g	"	242,000	1 0 0	2 6	Mar., 1900	3 5 0	3 7 6
pref. g	"	145,000	1 0 0	1 6	Dec., 1899	3 11 3	3 13 9
British S. Af., chartered	So. Africa	120,000	1 0 0	1 6	" 1899	4 10 0	4 15 0
Cape Copper, c	"	5,000,000	1 0 0	rts.	May, 1899	3 12 6	3 13 9
" pref	"	600,000	1 0 0	6 6	Jan., 1900	5 18 6	5 16 3
City & Suburban (New), g	Transvaal	150,000	2 0 0	6 6	" 1900	5 5 0	5 15 0
Con. Deep Level, g	"	1,360,000	4 0 0	8 0	Aug , 1899	4 15 0	4 17 6
Crown Reef, g	"	200,000	1 0 0	x all.	June, 1898	1 5 0	1 10 0
De Beers Con., d	Cape Colony	120,000	1 0 0	18 0	Nov., 1899	13 15 0	13 18 0
Ferreira, g	Transvaal	3,950,000	1 0 0	1 0	Dec., 1899	29 12 6	29 15 0
Geldenhuis Deep, g	"	90,000	1 0 0	80 0	Aug., 1899	19 15 0	20 5 0
Geldenhuis Est., g	"	350,000	1 0 0	8 0	Aug., 1899	8 17 6	9 2 6
Henry Nourse, g	"	200,000	1 0 0	10 0	Aug., 1899	5 14 6	6 2 6
Jagersfontein, d	Orange Fr. St.	125,000	1 0 0	10 0	Aug., 1899	6 17 6	7 2 6
Johannesburg Con. Invst.	So. Africa	1,400,000	5 0 0	9 0	June, 1899	14 15 0	15 5 0
Jubilee, g	Transvaal	2,750,000	1 0 0	2 0	Nov., 1899	1 12 6	1 15 0
Langlaagte Estate, g	"	50,000	1 0 0	5 0	Aug, 1899	5 0 0	5 10 0
May Con., g	"	500,000	1 0 0	3 0	Sept., 1899	2 17 6	3 2 6
Meyer & Charlton, g	"	275,000	1 0 0	6 0	Aug., 1899	4 0 0	4 5 0
Namaqua, c	"	85,000	1 0 0	8 0	July, 1899	4 10 0	5 0 0
Primrose (New), g	Cape Colony	200,000	2 0 0	4 0	Dec., 1899	4 10 0	4 15 0
Rand Mines, g	Transvaal	300,000	1 0 0	6 0	Aug., 1899	9 12 6	9 15 0
Robinson, g	So. Africa	400,000	1 0 0	50 0	Aug., 1899	37 3 9	37 6 3
Sheba, g	Transvaal	2,750,000	5 0 0	80 0	Aug., 1899	8 5 0	8 10 0
Sim. & Jack Prop., g	"	1,100,000	1 0 0	0 6	July, 1898	1 0 0	1 1 3
Wolhuter, g	"	5,000,000	5 0 0	4 0	July, 1899	5 3 9	5 6 3
	"	860,000	4 0 0	2 0	Feb., 1899	3 15 0	4 0 0

*Ex-dividend. ‡ Dividend pending.

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Author-ized Capital Stock.	Shares Issu'd No.	Shares Issu'd Par Val	Dividends Paid, 1900.	Dividends Total to Date.	Latest Date.	Latest Amt.
1	Acacia, g.	Colo..	$1,500,000	1,500,000	$1	.....	.....	.....	.....
2	Ætna Con., q.	Cal..	500,000	100,000	5	$30,000	$225,000	April. 1900	.15
3	Alabama Coal & Iron, pf	Ala...	2,500,000	25,000	100	43,750	43,750	Feb.. 1900	1.75
4	Alamo, g.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....
5	Alaska-Mexican, g.	Alask	1,000,000	180,000	5	18,000	447,031	Jan.. 1900	.10
6	Alaska-Treadwell, g.	Alask	5,000,000	200,000	25	75,000	4,295,000	Jan.. 1900	.37½
7	Alice, g. s.	Mont.	10,000,000	400,000	25	.....	1,075,000	April. 1898	.05
8	Alliance, g.	Colo..	500,000	450,000	1	.....	31,500	Dec.. 1899	.07
9	Amalgamated, c.	Mont.	75,000,000	750,000	100	3,000,000	4,500,000	April. 1900	2.00
10	Amazon, g.	Colo..	600,000	600,000	1	42,000	62,000	Mar.. 1900	.05
11	American Coal	Md..	1,500,000	60,000	25	75,000	802,500	Mar.. 1900	1.25
12	American Gold, g. s. c. l.	Colo..	3,000,000	300,000	10	.....	446,000	Dec.. 1899	.04
13	Amer. Sm. & Ref., pref.	U. S..	32,500,000	325,000	100	1,263,925	1,832,675	April. 1900	2.14
14	Am. Steel & Wire, pf.	U. S..	40,000,000	400,000	100	1,400,000	4,200,000	April. 1900	1.75
15	Am. Steel & Wire, com.	U. S..	50,000,000	500,000	100	875,000	875,000	April. 1900	1.75
16	American Zinc	Kas..	500,000	5,000	100	15,000	35,000	Mar.. 1900	1.00
17	Am. Zinc, Lead & Sm.	Mo...	2,500,000	60,000	25	60,000	180,000	Jan.. 9001	1.00
18	Anaconda Copper	Mont.	30,000,000	1,300,000	25	2,400,000	14,550,000	April. 1900	2.00
19	Anchoria-Leland, g.	Colo..	600,000	600,000	1	.....	198,000	April. 1899	.03
20	Anglo-Mexican, g.	Mex..	2,001,625	400,230	5	.....	1,728,998	Dec.. 1898	.24
21	Apollo Con., g.	Alask	1,000,000	100,000	10	70,000	210,000	Jan.. 1900	.07
22	Appie Ellen, g.	Colo.	600,000	600,000	1	.....	25,000	Aug.. 1898	.01
23	April Fool	Nev..	500,000	500,000	1	.....	16,000	Oct... 1899	.01
24	Argentum-Juniata, g.	Colo..	1,300,000	650,000	2	.....	156,000	Oct... 1895	.03
25	Argonaut	Cal..	2,000,000	200,000	10	50,000	470,000	Mar.. 1900	.05
26	Arizona Copper	Ariz..	3,190,550	.....	.....	421,153	1,309,572	Mar.. 1900	1.33
27	Associated, g.	Colo..	1,250,000	1,250,000	1	.....	84,000	Feb.. 1899	.01
28	Atlantic, c.	Mich.	1,000,000	40,000	25	80,000	860,000	Feb.. 1900	2.00
29	Aurora, i.	Mich.	2,500,000	100,000	25	.....	890,000	June. 1899	.50
30	Bald Butte	Mont.	250,000	250,000	1	.....	769,648	Dec.. 1899	.03
31	Bankers, g.	Colo..	1,250,000	1,250,000	1	.....	.....	.....	.....
32	Bankok Cora Belle, s.	Colo..	600,000	600,000	1	.....	106,000	July.. 1896	.01
33	Battle Mtn. Con., g.	Colo..	2,500,000	2,500,000	1	.....	.....	.....	.....
34	Big Four, g.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....
35	Big Seven, g.	Cal ..	100,000	100,000	1	.....	6,000	April 1898	.03
36	Big Six, g. s.	Colo..	500,000	500,000	1	.....	15,000	May.. 1898	.00½
37	Boston-Aurora, pref.	Mo...	800,000	32,000	25	15,840	44,880	Mar.. 1900	.17
38	Boston & California	Cal ..	600,000	600,000	1	.....	72,000	June. 1899	.06
39	Boston & Colo. Smelting	Colo..	750,000	15,000	50	11,250	281,250	Jan.. 1900	.75
40	Boston Duenweg, z.	Mo...	1,000,000	40,000	10	12,000	44,900	Mar.. 1900	.10
41	Boston Get There, z.	Mo...	250,000	22,500	10	6,750	18,000	Mar.. 1900	.10
42	Boston-Little Circle, z.	Mo-K.	1,000,000	100,000	10	30,000	110,000	Mar.. 1900	.10
43	Boston & Mont. Con.	Mont.	3,750,000	150,000	25	1,200,000	15,700,000	Feb.. 1900	8.00
44	Boston Providence, z.	Mo...	150,000	15,000	10	2,250	9,750	Mar.. 1900	.05
45	Boston, q.	Cal..	1,000,000	100,000	10	10,000	20,000	Jan.. 1900	.10
46	Boston Sunflower, z.	Mo...	150,000	15,000	10	.....	4,500	Oct... 1899	.30
47	Breece, i.	Colo..	5,000,000	200,000	25	10,000	80,000	Feb.. 1900	.05
48	Buffalo Hump	Idaho	1,000,000	1,000,000	1	20,000	20,000	April. 1900	.01
49	Bullion-Beck & Champ.	Utah.	1,000,000	100,000	10	30,000	2,468,400	Mar.. 1900	.10
50	Bunker Hill & Sullivan.	Idaho	3,000,000	300,000	10	63,000	864,000	Mar.. 1900	.07
51	Calumet & Hecla, c.	Mich.	2,500,000	100,000	25	2,000,000	68,850,000	Mar.. 1900	20.00
52	Cambria Steel.	Pa...	16,000,000	320,000	50	160,000	1,280,000	Feb.. 1900	.50
53	Cariboo-McKinney, g.	B.Col	800,000	800,000	1	.....	311,965	June. 1899	.01½
54	Centen l-Eureka, g.s.l.c.	Utah.	5,000,000	100,000	25	17,700	2,167,700	Mar.. 1900	.50
55	Central Lead, l.	Mo...	1,000,000	10,000	100	15,000	157,000	Mar.. 1900	.50
56	Champion, g. s.	Cal..	340,000	34,000	10	.....	321,700	Nov.. 1899	.25
57	Charleston, p. r.	S. C..	1,000,000	10,000	100	.....	200,000	June. 1899	2.00
58	Colonial, l.	Mo...	1,000,000	1,000,000	1	.....	10,000	Aug.. 1899	.01
59	Colorado Smelting	Mont.	1,000,000	100,000	10	.....	1,945,000	Jan.. 1899	1.00
60	Commodore	Colo..	1,200,000	1,200,000	1	.....	432,000	Jan.. 1899	.04
61	Commonwealth, z., pref.	Mo...	500,000	100,000	5	15,000	35,000	Mar.. 1300	.05
62	Consolidated Gold Mines	Colo..	1,000,000	1 000,000	1	20,000	30,000	Mar.. 1900	.01
63	Consolidation Coal	Md...	10,250,000	102,500	100	205,000	5,921,650	Feb.. 1900	2.00
64	Cons. Zinc & Lead, pf.	Mo...	400,000	400,000	1	8,000	8,000	Jan.. 1900	.20
65	Continental, z.	Mo...	1,500,000	150,000	10	.....	.....	.....	.....
66	Cordell, z. l.	Mo...	300,000	60,000	5	6,000	6,000	Mar.. 1900	.05
67	Crippie Creek Con.	Colo..	2,000,000	2,000,000	1	160,000	160,000	Mar.. 1900	.08
68	Cræsus, g.	Cal...	1,000,000	190,000	5	11,400	60,400	Mar.. 1899	.06
69	Crowned King, g. s	Ariz.	6,000,000	600,000	10	.....	242,760	May.. 1899	.02
70	Dalton & Lark, g.s. l.	Utah.	2,500,000	2,500,000	1	.....	87,500	Mar.. 1896	.00½
71	Daly	Utah.	3,000,000	150,000	20	.....	2,925,000	Mar.. 1897	.25
72	Daly West	Utah.	3,000,000	150,000	20	150,000	270,000	Mar.. 1900	.25
73	Damon, g.	Colo..	2,000,000	2,000,000	1	.....	.....	.....	.....
74	Deadwood-Terra, g.	S. D..	5,000,000	200,000	25	.....	1,350,000	May.. 1898	.15
75	Deer Trail Con.	Wash	3,000,000	3,000,000	1	.....	55,000	Dec.. 1899	.00½
76	De Lamar, g. s.	Idaho	2,000,000	400,000	5	.....	2,346,000	May.. 1899	.12
77	Della S., g.	Colo.	1,000,000	1,000,000	1	.....	60,000	Jan.. 1897	.01
78	Delta, l. z.	Mo...	100,000	100,000	1	2,685	6,785	Mar.. 1900	.01
79	Doe Run, l.	Mo...	500,000	5,000	100	7,500	97,500	Mar.. 1900	.50
80	Dutch, g.	Cal ..	1,500,000	130,000	10	.....	39,000	Feb.. 1898	.05
81	Eldorado, g.	Cal...	1,000,000	100,000	10	.....	10,000	July.. 1899	.10
82	Elkhorn, New, s. l.	Colo..	437,500	87,500	5	.....	1,325,000	June. 1898	.48
83	Elkton Con., g.	Colo..	1,250,000	1,125,000	1	33,750	754,461	Mar.. 1900	.03
84	El Paso, g. s.	Colo..	650,000	650,000	1	.....	12,393	Jan.. 1898	.01
85	Empire State-Idaho	Idaho	1,000,000	98,514	10	88,662	406,700	Mar.. 1900	.30
86	Enterprise, s. l.	Colo..	500,000	500,000	1	.....	900,000	Sept.. 1898	.05
87	Fanny Rawlings, g. s.	Colo..	1,000,000	1,000,000	1	.....	20,000	Aug.. 1899	.01
88	Federal Steel, pf.	U. S..	100000,000	532,610	100	3,195,660	4,793,520	April. 1900	3.00
89	Federal Steel, com.	U. S..	100000,000	464,843	100	1,743,161	1,743,161	Mar.. 1900	2.50
90	Fern, g.	B.Col	200,000	200,000	1	.....	10,000	Jan.. 1898	.05
91	Ferris-Haggarty, c.g.s.	Wyo.	1,000,000	1,000,000	1	.....	5,000	Feb.. 1899	.00½
92	Findley, g.	Colo..	1,250,000	1,250,000	1	.....	.....	.....	.....
93	Florence, s.	Mont.	2,500,000	400,000	5	.....	230,000	Dec.. 1899	.05
94	Frisco Con., l. s.	Idaho	2,500,000	500,000	5	.....	920,000	Nov.. 1899	.25
95	Galena, s. l. g.	Utah.	1,000,000	100,000	10	.....	71,000	Sept.. 1897	.05
96	Garfield Con., g.	Colo..	1,200,000	1,200,000	1	.....	34,000	May.. 1899	.01
97	Geyser-Marion, g.	Utah.	1,500,000	300,000	5	.....	96,000	Sept.. 1898	.02
98	Gold Coin of Victor, g.	Colo..	1,000,000	1,000,000	1	60,000	420,000	Mar.. 1900	.02
99	Gold & Globe, g.	Colo.	750,000	750,000	1	.....	51,625	July.. 1898	.00½
100	Gold King, g.	Colo..	1,000,000	1,000,000	1	30,000	120,000	Jan.. 1900	.03
101	Gold Sovereign, g.	Colo..	3,000,000	3,000,000	1	.....	.....	.....	.....
102	Golden Cycle, g.	Colo..	1,000,000	200,000	5	30,000	288,500	Mar.. 1900	.05
103	Golden Eagle, g.	Colo..	500,000	500,000	1	.....	20,000	Nov.. 1899	.01
104	Golden Fleece, g. s.	Colo..	600,000	600,000	1	.....	569,480	Feb.. 1897	.01
105	Golden Reward, g.	S. D..	1,000,000	100,000	10	.....	155,000	Feb.. 1898	.15
106	Golden Star, g.	Ont..	1,200,000	1,200,000	1	.....	45,500	July.. 1899	.00½
107	Gould, g.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....
108	Grafton, g.	Colo..	1,000,000	1,000,000	1	.....	10,000	Oct... 1899	.01
109	Grand Central, g.	Utah.	250,000	250,000	1	.....	666,250	Sept.. 1899	.24
110	Grand Gulch	Ariz..	250,000	240,000	1	4,800	4,800	Feb.. 1900	.01
111	Grass Valley Expl	Cal...	100,000	30,000	2	22,500	52,500	Mar.. 1900	.25
112	Gwin, g.	Cal .	1,000,000	20,000	50	15,000	116,500	Mar.. 1900	.25
113	Hall Mines, Ltd	B.Col	1,500,000	250,000	5	.....	120,000	May.. 1899	.24
114	Hecla Con.	Mont	1,500,000	30,000	50	.....	2,190,000	Dec.. 1898	.50
115	Hidden Treasure, g.	Cal...	500,000	360,000	1	.....	3,600	July.. 1899	.01
116	Holy Terror, g.	S. D..	500,000	500,000	1	.....	167,000	Dec.. 1899	.01
117	Homestake, g.	S. D.	21,000,000	210,000	100	315,000	8,458,750	Mar.. 1900	.50
118	Horn-Silver, g. s. c. sp. l.	Utah.	10,000,000	400,000	25	.....	5,250,000	Mar.. 1899	.05
119	Ida May, g.	Colo..	500,000	500,000	1	.....	.....	.....	.....
120	Idaho, s. l.	B.Col	500,000	500,000	1	.....	292,000	Jan.. 1899	.05½
121	Independence Town & M	Colo..	1,250,000	1,250,000	1	25,000	37,500	April. 1900	.01
122	International, z.	Mo...	$1,000,000	1,000,000	$1	$15,000	$15,000	April. 1900	.01
123	Iowa, g. s. l.	Colo..	1,666,667	1,666,667	1	7,500	97,500	Jan.. 1900	.00¾
124	Iron Mountain, g. s. l. i.	Mont.	5,000,000	500,000	10	.....	507,500	April. 1898	.02
125	Iron Silver, s. l.	Colo..	10,000,000	500,000	20	.....	2,500,000	April. 1899	.20
126	Isabella, g.	Colo..	2,250,000	2,250,000	1	67,500	607,500	Mar.. 1900	.03
127	Jack Pot, g.	Colo..	1,250,000	1,250,000	1	.....	175,000	Dec.. 1899	.06
128	Jamison	Cal ..	3,900,000	390,000	10	.....	50,700	April. 1899	.10
129	Keystone, g.	Colo..	1,500,000	1,500,000	1	.....	.....	.....	.....
130	Klondike Bonanza, Ltd.	Klond	750,000	52,750	5	.....	12,000	Aug.. 1899	.24
131	Lake Superior Iron	Mich.	2,100,000	84,000	25	.....	2,132,000	Feb.. 1899	1.00
132	Last Chance, s. l.	B.Col	500,000	500,000	1	.....	45,000	Apr.. 1899	.05
133	Last Dollar, g.	Colo..	1,500,000	1,500,000	1	30,000	60,000	Feb.. 1900	.02
134	Le Roi, g.	B.Col	5,000,000	200,000	5	.....	1,305,000	Nov.. 1899	1.20
135	Lexington, g.	Colo..	1,500,000	1,500,000	1	.....	.....	.....	.....
136	Lillie, g.	Colo..	1,250,000	250,000	5	33,750	335,360	Mar.. 1900	.05
137	Little Tiger, g.	Cal...	500,000	500,000	1	15,000	47,500	Feb.. 1900	.01½
138	Mammoth, g. s. c.	Utah.	10,000,000	400,000	25	40,000	1,650,000	Jan.. 1900	.10
139	Marion Con.	Colo..	5,000,000	500,000	10	.....	300,000	May.. 1899	.01
140	Mary McKinney, g.	Colo..	1,000,000	1,000,000	1	30,000	60,000	Jan.. 1900	.08
141	Maryland Coal, pf.	Md...	1,885,005	18,850	100	.....	546,619	Dec.. 1899	3.00
142	Matoa, g.	Colo..	1,000,000	1,000,000	1	.....	25,000	Dec.. 1898	.02½
143	Mercur, g.	Utah.	5,000,000	200,000	25	50,000	1,416,000	Jan.. 1900	.25
144	Minnesota Iron	Minn.	16,500,000	165,000	100	.....	4,735,000	Oct... 1898	1.50
145	Missouri Zinc Fields, pf.	Mo...	400,000	16,000	25	7,930	29,242	Mar.. 1900	.16
146	Modoc, g. s.	Colo..	500,000	500,000	1	15,000	160,000	Mar.. 1900	.01
147	Mollie Gibson, s. l.	Colo..	5,000,000	1,000,000	5	.....	4,080,000	Jan.. 1895	.05
148	Monarch, g.	Colo..	1,000,000	1,000,000	1	120,000	120,000	April. 1900	.12
149	Montana, Ltd., g. s.	Mont.	3,300,000	657,128	5	.....	453,700	April. 1899	.12
150	Montana Ore Purchas'g.	Mont.	2,500,000	80,000	25	80,000	1,440,000	Feb.. 1900	1.00
151	Montreal, g.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....
152	Monument, g.	Colo..	300,000	300,000	1	.....	18,124	Nov.. 1899	.01
153	Moon-Anchor Con., g.	Colo..	1,750,000	600,000	1	.....	261,000	Nov.. 1898	.07½
154	Moose, g.	Colo..	600,000	600,000	1	.....	186,000	Feb.. 1896	.01
155	Morning Star Drift, g.	Cal...	240,000	2,400	100	.....	847,200	Nov.. 1899	10.00
156	Morse, g.	Colo..	1,250,000	1,250,000	1	.....	213,150	May.. 1899	.12
157	Mountain Beauty, g.	Colo..	2,000,000	2,000,000	1	.....	.....	.....	.....
158	Mt. Rosa, g.	Colo..	1,000,000	1,000,000	1	.....	75,000	Dec.. 1899	.04
159	Mt. Shasta	Cal...	100,000	20,000	5	.....	6,000	May.. 1899	.30
160	Moulton	Mont.	2,000,000	400,000	5	.....	500,000	Oct... 1893	.05
161	Mountain Copper.	Cal ..	6,250,000	250,000	25	.....	1,173,750	Oct... 1899	2.16
162	Napa Con., q.	Cal ..	700,000	100,000	7	40,000	1,080,000	April. 1900	.20
163	National Lead, com.	U. S..	15,000,000	149,054	100	149,054	1,341,486	Mar.. 1900	1.00
164	National Lead, pf.	U. S .	15,000,000	149,040	100	260,820	8,607,060	Mar.. 1900	1.75
165	National Salt, pf.	U. S..	5,000,000	24,000	100	42,000	126,000	Jan.. 1900	1.75
166	National Steel, pf.	U. S..	27,000,000	270,000	100	.....	1,890,000	Dec.. 1899	1.75
167	New Central Coal.	Md...	1,000,000	50,000	20	20,000	490,000	April. 1900	.40
168	New Idria, q.	Cal...	500,000	100,000	5	40,000	210,000	April. 1900	.20
169	New York Zinc.	Mo...	700,000	28,000	25	21,000	42,000	Mar.. 1900	.25
170	N.Y.& Hon Rosario, s.g.	C. A..	1,500,000	150,000	10	45,000	1,205,000	Mar.. 1900	.10
171	North Star Mines of N.J.	Cal ..	5,000,000	250,000	10	.....	50,000	Nov.. 1899	.20
172	Nugget.	Colo..	1,000,000	1,000 000	1	.....	35,000	Aug.. 1898	.00½
173	Okanogan, g.	Wash	62,500	1,250,000	05	.....	3,125	Oct... 1899	.00¼
174	Ontario, s. l.	Utah.	15,000,000	150,000	100	45,000	13.617,500	Jan.. 1900	.30
175	Ophir, g.	Colo..	700,000	700,000	1	.....	.....	.....	.....
176	Orphan Belle, g.	Colo..	1,000,000	1,000,000	1	.....	197,899	Dec.. 1899	.09
177	Original Empire, g.	Cal...	5,000,000	50,000	100	.....	500,000	May.. 1899	1.00
178	Osceola, c.	Mich.	2,500,000	93,000	25	.....	3,080,500	Dec.. 1899	3.00
179	Pacific Coast Borax.	Cal..	2,000,000	20,000	100	100,000	522,500	Dec.. 1900	5.00
180	Parrot, c.	Mont.	2,300,000	230,000	10	345,000	3,380,808	Jan.. 1900	.50
181	Pennsylvania Coal.	Pa....	5,000,000	100,000	50	.....	4,050,000	May.. 1899	8.00
182	Pennsylvania Con.	Cal..	5,150,000	51,500	100	15,450	151,625	Mar.. 1900	.10
183	Pennsylvania Steel, pf.	Pa.. .	1,500,000	15,000	100	26,250	52,500	Jan.. 1900	1.75
184	Petro, g.	Utah.	1,000,000	200,000	5	.....	32,000	Oct... 1899	.02½
185	Pharmacist Con., g.	Colo..	1,500,000	1,500,000	1	.....	84,000	Jan.. 1898	.01
186	Pioneer, g.	Cal..	1,000,000	100,000	10	.....	62,500	Mar.. 1899	.12½
187	Pittsburg Coal, pf.	Pa.. .	32,000,000	308,000	100	539,000	539,000	Jan.. 1900	1.75
188	Plumas Eureka, g.	Cal ..	1,406,250	140,625	10	.....	2,713,169	Oct... 1896	.12
189	Portland, g.	Colo..	3,000,000	3,000,000	1	210.000	2,767,080	Mar.. 1900	.02
190	Princess, g.	Colo..	1,000,000	1,000,000	1	.....	40,000	May .. 1896	.01
191	Prince Albert, g.	Colo..	3,000,000	3,000,000	1	.....	.....	.....	.....
192	Queen Bess Propr., s. l.	B.Col	500,000	100,000	5	.....	25,000	July.. 1899	.12½
193	Quicksilver, pref.	Cal..	4,300,000	43,000	100	.....	1,845,411	May.. 1899	.50
194	Quincy, c.	Mich.	2,500,000	100,000	25	500,000	11,570,000	Feb.. 1900	5.00
195	Rambler—Cariboo, s. l.	B.Col	1,000,000	1,000,000	1	.....	60,000	Dec.. 1899	.01
196	Raven, g.	Colo..	1,500,000	1,000,000	1	30,000	99,500	Mar.. 1900	.01
197	Reco, s. l.	B.Col	1,000,000	1,000,000	1	.....	297,500	Jan.. 1898	.10
198	Republic Con., g.	Wash	3,500,000	3,500,000	1	105,000	382,500	Mar.. 1900	.01
199	Republic Iron & Steel, pf	U. S..	25,000,000	212,570	100	371,997	1,215,992	April. 1900	1.75
200	Reward, g.	Cal ..	1,000,000	100,000	10	.....	20,000	Aug .. 1899	.20
201	Russell-Irwin, z.	Mo...	250,000	25,000	10	.....	15,000	Oct... 1899	.10
202	Sacramento, g.	Utah.	5,000,000	1,000,000	5	.....	138,000	Oct... 1899	.00½
203	St. Joseph, l.	Mo...	3,000,000	300,000	10	37,500	2,934,500	Mar.. 1900	.50
204	Seventy-Six, g. s.	Colo..	1,000,000	200,000	5	.....	2,950	Mar.. 1898	.01
205	Santa Rosalia, g.s.	Cal...	100,000	100,000	1	.....	130,000	Oct... 1899	.05
206	Silver King, g. s. l.	Utah.	3,000,000	150,000	20	225,000	2,675,000	Mar.. 1900	.50
207	Small Hopes, s.	Colo..	5,000,000	250,000	20	.....	3,325,000	Feb.. 1899	.10
208	Smuggler, s. l. z.	Colo..	1,000,000	1,000,000	1	96,000	1,300,000	Mar.. 1900	.03
209	South Eureka, g.	Cal ..	1,500,000	300,000	5	.....	12,000	May.. 1898	.04
210	South Swansea, s. l.	Utah.	150,000	150,000	1	.....	165,000	Oct... 1899	.05
211	Specimen, g.	Colo..	1,200,000	1,200,000	1	.....	.....	.....	.....
212	Squaw Mountain, g.	Colo..	2,000,000	2,000,000	1	.....	10,000	Nov.. 1899	.00½
213	Standard Con., g. s.	Cal...	2,000,000	200,000	10	20,000	3,919,226	Feb.. 1900	.10
214	Standard.	Idaho	500,000	500,000	1	.....	1,745,000	April. 1899	.06
215	Stratton's Independ'ce.	Colo..	5,500,000	1,000,000	5	480,000	1,440,000	Feb.. 1900	.48
216	Strong, g.	Colo..	2,500,000	2,500,000	1	75,000	925,000	Mar.. 1900	.01
217	Swansea, s. l.	Utah.	500,000	100,000	5	20,000	221,500	Mar.. 1900	.05
218	Tamarack, c.	Mich.	1,500,000	60,000	25	.....	6,270,000	Dec.. 1899	6.00
219	Temonj, g.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....
220	Tomboy, g.	Colo..	1,500,000	300,000	5	.....	812,000	Dec.. 1899	.24
221	Tornado, g.	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....
222	Union, g.	Colo..	1,250,000	1,250,000	1	.....	82,744	June. 1896	.01
223	Union Leasing.	Colo..	1,000,000	1,000,000	1	.....	336,000	July. 1895	.04
224	United, z. l., pref.	Mo...	1,000,000	40,000	25	20,000	60,000	Jan.. 1900	.50
225	United Verde, c.	Ariz..	3,000,000	300,000	10	450,000	1,312,500	Mar.. 1900	.50
226	Utah.	Utah.	1,000,000	100,000	10	.....	179,000	Jan.. 1899	.02
227	Victor, g.	Colo..	1,000,000	200,000	5	.....	1,155,000	Dec.. 1898	.50
228	Vindicator, Con., g.	Colo..	1,500,000	1,065,000	1	53,250	357,750	Jan.. 1900	.05
229	War Eagle Con.	B.C..	2,000,000	1,750,000	1	52,500	545,250	Feb.. 1900	.01½
230	West. Mine Enterprise.	Mont.	500,000	120,000	1	.....	48,680	Jan.. 1898	.20
231	What Cheer, z.	Mo...	225,000	22,500	10	4,500	9,000	Feb.. 1900	.20
232	Wolverine, c.	Mich.	1,500,000	60,000	25	120,000	390,000	April. 1900	2.00
233	Work, g.	Colo..	1,500,000	1,500,000	1	.....	.....	.....	.....
234	Yellow Aster, g.	Cal...	1,000,000	100,000	10	60,000	383,789	Mar.. 1900	.20
235	Ymir, g.	B.Col	1,000,000	125,000	5	.....	30,000	Nov.. 1899	.24
236	.....	.....	.....	.....	.....	.....	.....	.....	.....

G., Gold. S., Silver. L., Lead. C., Copper. Z., Zinc. This table is corrected up to March 24. Correspondents are requested to forward changes or additions.

CHEMICALS, MINERALS, RARE ELEMENTS, ETC.—CURRENT PRICES.

Abrasives—	Cust. Meas.	Price.
Carborundum, f.o.b. Niagara Falls, Powd., F. FF. FFF	lb.	$0.10
Minute No. 1	"	.15
No. 15	"	1.00
Corundum, N. C.	"	.07@.10
Chester	"	.04½@.05
Emery, Turkish flour	"	.03
Grains	"	.05
Naxos flour	"	.03
Grains	"	.05
Chester flour	"	.03
Grains	"	.05
Peekskill flour	"	.03¼
Grains	"	.02½
Crude, Kuluk, best	lg. ton	18.50
Levant,	"	22.00
Naxos (Greek) best	"	26.00
Pumice Stone, Am. powd.	lb.	.01@.02
Italian, powdered	"	.01½
Lump, per quality	"	.04@.40
Rottenstone, ground	"	.02½@.03
Lump, per quality	"	.05@.14
Rouge, per quality	"	.17@.30
Acids—Acetic, 30% pure	100 lbs.	2.75
30% ch. pure	"	6.00
80% pure	"	7.50
Benzoic, English	oz.	.12
German	lb.	.46
Boracic, pure cryst	"	.10½
Powdered	"	.11
Carbolic, crude, 60%	gal.	.28
Cryst, 37%	lb.	.36
Liquid, 95%	gal.	.40
Carbonic, liquid	lb.	.12½
Chromic, crude	"	.20
Chem. pure	"	.50
Absol. ch. pure	"	1.75
Hydrochloric, ch. pure	"	.07
Hydrofluoric, 30%	"	.03
48%	"	.05
Best	"	.25
Nitric, chem. pure	"	.09
Sulphuric, 98%	"	.01½
Chem. pure	"	.07
Tartaric, cryst	"	.31½
Powder	"	.32
Alcohol—Grain	gal.	2.40
Refined wood, 95@97%	"	.90@.95
Purified	"	1.20
Alum—Lump	100 lbs.	1.75
Ground	"	1.85
Chrome, com'l	"	3.50
Aluminum—Nitrate	lb.	1.50
Oxide, com'l, common	"	.06½
Best	"	.20
Pure	"	.80
Hydrated	"	.05
Sulphate, pure	"	1.50
Com'l	"	.01¼
Ammonia—Aqua, 16°	"	.04½
18°	"	.05
20°	"	.05½
22°	"	.07½
Ammonium—Bromide, p'r	"	.52@.53
Carbonate lump	"	.08¼@.08¾
Powdered	"	.09¼@.09¾
Muriate, gran., white	"	.06¼@.06⅜
Gray, gran	"	.06¾@.06⅛
Lump	"	.08¼@.08½
Nitrate, white, pure (99%)	"	.10½
Phosphate, com'l	"	.12
Chem. pure	"	.60
Antimony—Glass	"	.30@.40
Needle, lump	"	.05½@.06
Powdered, ordinary	"	.05¾
Best	"	.06½
Oxide, com'l white, 95%	"	.09⅛
Com'l white, 99%	"	.12
Com'l gray	"	.07
Sulphuret, com'l	"	.16
Arsenic—White	"	.04¾
Red	"	.07¾
Asphaltum—		
Ventura, Cal	sh ton	32.00
Cuban, crude	lb.	.01½@.03½
Egyptian, crude	"	.06
Trinidad, refined	lg. ton	30.00@35.00
San Valentino	lg. ton	15.00
Seyssel (French) mastic	sh. ton	21.00
Gilsonite, Utah, ordinary	lb.	.03
Select	"	.03¾
Barium—Carbonate, Lump, 80@90%	sh. ton	25.00@27.50
92@98%	"	26.00@29.00
Powdered, 80@90%	lb.	.01¾@.02
Chloride, com'l	"	.02@.02¼
Chem. pure cryst	"	.05
Nitrate, powdered	"	.06
Oxide, com'l, hyd. cryst	"	.18
Hydrated, pure cryst.	"	.25
Pure, powd	"	.27
Sulphate	"	.01
Barytes—Am. Cr., No. 1	sh. ton	9.00
Crude, No. 2	"	8.00
Crude, No. 3	"	7.75
Am. Floated	"	14.50@17.50
German, gray	"	14.50
Snow white	"	17.50
Bauxite—Ga. mines: 1st grade	lg. ton.	5.00@5.10
Second grade	"	4.00@4.50
Ala. f.o.b., 1st grade	"	5.00
Second grade	"	3.85
Bismuth—Oxide, hydr.	lb	2.25@2.30
Subnitrate	"	1.30@1.35
Bitumen, "B"	"	.03½
"A"	"	.05
Bone Ash	"	03¼@.03½
Borax—Cryst. and pow'd	"	.07@.07¼
Calcined	"	.25
Bromine—Bulk	"	.45
Cadmium—Metallic	"	1.50@2.00
Acetate, pure white	100 lbs.	1.00
Sulphide	"	2.00@3.00
Sulphate	"	2.00@2.50

Calcium—	Cust. Meas.	Price.
Acetate, gray	100 lbs.	$1.55
" brown	"	1.10
Carbide, in ton lots, f. o. b. Niagara Falls, N.Y.	sh. ton	75.00
Carbonate, ppt	lb.	.05
Chloride, com'l	100 lbs.	.95
Best	"	1.90
Sulphite	lb.	.05
Cement—		
Portland, Am.	400 lbs. bbl.	1.50@2.00
Belgium	"	1.95@2.20
English	"	2.45@2.55
German	"	2.30@2.70
"Rosendale," 300 lbs.	"	1.10
Sand cement, 400 lbs.	"	1.55@1.95
Slag cement, imported	"	1.65
Ceresine—		
Orange and Yellow	lb.	.11
White	"	.12.@.13½
Chalk—Lump, bulk	sh. ton	2.15
Precipitated	lb.	.05
French	"	.03
Chlorine—Liquid	"	.28
Water	"	.15
Chrome Ore—		
(50% chrome) ex ship	lg. ton	20.00
Sand	"	35.00
Bricks, f.o.b., Pittsburg	M	175.00
Clay, China—Am. com., ex-dock, N. Y.	lg ton	7.70
Am. best, ex-dock, N. Y.	"	8.70
English, common	"	11.50
Best grade	"	16.50
Fire, ground, f.o.b. Jersey City, N. J.	sh. ton	4.00@5.00
Slip Clay	"	6.00
Coal Tar Pitch	gal.	.08
Cobalt—Carbonate	lb.	1.50
Nitrate	"	1.30
Oxide—Black	"	2.00
Gray	"	2.50
Smalt, blue ordinary	"	.20
Best	"	.30
Chem. pure	"	5.00
Copperas	100 lbs.	.72½
Copper—Carbonate	lb.	.18
Chloride	"	.25
Nitrate, crystals	"	.35
Oxide, com'l	"	.19
Cream of Tartar—Crys.	"	.21½
Granulated	"	.21½
Powdered	"	.22½
Cryolite	"	.06½
Explosives—		
Blasting powder, A. 25 lb. keg		2.50
Blasting powder, B	"	1.25
"Rackarock," A	lb.	.25
"Rackarock," B	"	.18
Judson R.R. powder	"	.10
Dynamite (20% nitroglycerine)	"	.13
(30% nitro-glycerine)	"	.14
(40% nitro-glycerine)	"	.15
(50% nitro-glycerine)	"	.17
(60% nitro-glycerine)	"	.19
(75% nitro-glycerine)	"	.22
Glycerine for nitro (32 2-10° Be.)	"	.13½@.13⅞
Feldspar—Ground	sh. ton	7.00@8.50
Flint—(See Silica).		
Fluorspar, f. o. b. mines—		
Am. lump, 1st grade	"	7.50
2d gr	"	7.00
Gravel	"	6.50
Crushed	"	8.00
Ground, extra fine	"	13.00
Fine	"	11.50
Foreign, lump	"	8.00@12.00
Ground	"	11.50@14.00
Fuller's Earth—Lump	100 lbs.	.75
Powdered	"	.85
Refined lump	"	1.25
Ganister Rock	lg. ton.	6.50
Gypsum—Ground	sh. ton	8.00@8.50
Fertilizer	"	7.00
Rock	lg. ton	4.00
English and French	"	14.00@16.00
Infusorial Earth—Ground, American, best		20.00
French	"	37.50
German	"	40.00
Iodine—Crude	100 lbs.	2.45
Resublimed	"	2.85
Iron—Chromate	lb.	.03@.10
Muriate	"	.05
Nitrate, com'l	"	.01¼
True	"	.03¾
Oxide, pure copperas col	"	.05@.10
Purple-brown	"	.02
Venetian red	"	.01@.01½
Scale	"	.01@.03
Kaolin—(See Clay, China).		
Kryolith—(See Cryolite.)		
Lead—Acetate, white	lb.	.07
Com'l, broken	"	.06¼
Brown	"	.05½
Nitrate, com'l	"	.06½
Chem. pure	"	.35
Lime—Bldg., ab. 250 lbs	bbl.	.90
Finishing	"	1.00
Magnesite—		
Crude, lump (95%) Greece	lg. ton	7.00@7.50
German (85%)	"	12.00
Calcined (Greece)	sh. ton	16.50
Domestic, soft	"	12.00@15.00
Bricks (Greece)	M.	170.00
Bricks, Am., f.o.b., Pittsburg	M.	175.00
Magnesium—		
Carbonate, light, fine pd	lb.	.03¾
Blocks	"	.06@.09
Chloride, com'l	"	.01¾
Fused	"	.20
Nitrate	"	.60
Manganese—Crude, pow'd 70@75% binoxide	"	.01¼@.01½

Manganese—	Cust. Meas.	Price.
Crude, pow'd 75@85% binoxide	lb.	.01½@.02½
85@90% binoxide	"	.02½@.03¼
90@95% binoxide	"	.02¾@.05½
Carbonate	"	.16@.20
Chloride	"	.04
Ore, 50%, Foreign	unit	.24@.24½
Domestic	"	.20
Crude, prepared, domestic	lb.	.01@.01½
Marble—Flour	sh. ton	5.50@6.00
Mercury—		
Bichloride	lb.	.74
Mica—N. Y. gr'nd, coarse	"	.03@.05
Fine	"	.06@.07
Sheets, 1½x3 in	"	.60
8x10 in	"	13.00
Mineral Wool—		
Slag, ordinary	100 lbs.	.90
Selected	"	1.40
Extra	"	3.00
Rock, ordinary	sh. ton	32.00
Selected	"	40.00
Extra	"	50.00
Monazite—92%	"	140.00
Nickel—Oxide, No. 1	lb.	1.00
No. 2	"	.60
Oils—Black, reduced 29 gr.		
25@30 cold test	gal.	.11@.11½
15, cold test	"	.12@.12½
Zero	"	.13@.14
Summer	"	.10½@.11
Cylinder, dark steam ref	"	.10@.15
Dark filtered	"	.13@.18
Light filtered	"	.15@.17½
Extra cold test	"	.23@.27
Gasolene, 86°@90°	"	.16@.21
Naphtha, crude 68@72°	"	10.65
"Stove"	"	.13
Linseed, domestic raw	"	.54
Boiled	"	.58
Calcutta, raw	"	.68
Graphite, lubricating, Am. dry	lb.	.10
In oil	"	.12
Axle grease	"	.08½@.10
Wood grease	"	.05@.06
Ozokerite—Foreign	"	.08
Paints and Colors—		
Benzine, Sumatra	"	.35@.40
Marbled	"	.27
Chrome green, common	"	.05
Extra	"	.12@.15
Yellow, common	"	10
Best	"	.25
Silica Graphite, thick	"	.12
Thinned	gal.	1.15
Lampblack, com'l	lb.	.03
Refined	"	.08
Calcined	"	.12@.20
Fine spirit	"	.20@.35
Litharge, Am. powd	"	.06½
English flake	"	.09½
Glassmakers, Foreign	"	.06½@.08
Metallic, brown	sh. ton	16.00@19.50
Red	"	16.00
Ocher, Am. common	"	9.25@10.00
Best	"	21.25@25.00
Dutch, washed	lb.	.04¾
French, washed	"	.01¼@.02½
Orange mineral, Am	"	.08¼@.08½
Foreign, as to make	"	.09¾@.11¼
Paris green, pure, bulk	"	.12½
Red lead, American	"	.06½@.07
Foreign	"	.08¼
Shellac, "D. C."	"	.27
Native	"	.14½
Turpentine, spirits	gal.	.54½@.55
Ultramarine, best	lb.	.25
Vermilion, Amer. lead	"	.14
Quicksilver	"	.69
Chinese	"	.80
English, imported	"	.71
White lead, Am., dry	"	.05¾
In oil	"	.06½
English, in oil	"	.08¾
Whiting, common	100 lbs.	.42
Gilders	"	.54
Zinc white, Am., ex. dry	lb.	.04¾@.05
American, red seal	"	.07@.07¼
Green seal	"	.07¾@.08
Foreign, red seal, dry	"	.06¼@.07¾
Green seal, dry	"	.06¾@.06¾
Foreign, in oil	"	.10½@.11¾
Plumbago—		
Am. lump, f. o. b. Providence, R. I.	sh. ton	8.00
Am. pulv., f. o. b. Providence, R. I.	"	30.00
German, lump	lb.	.01½
Pulverized	"	.02
Ceylon, pulv. common	"	.03¾
Best	"	.06@.10
Italian, pulv	"	.01¼
Potash—Caustic, ord	"	.05½
Elect. (90%)	"	.06½
Potassium—		
Bicarbonate cryst	"	.08½
Powdered or gran	"	.12
Bichromate	"	.09
Bromide	"	.46
Carbonate	"	.02¾
Chromate	"	.35
Cyanide (98@99%)	"	.28@.29
Ferro-cyanide	"	.19
Iodide, bulk	"	2.30
Permanganate, pure cr.	"	.14
Prussiate, yellow	"	.18½
Red	"	.37
Silicate	"	.06
Sulphide, com'l	"	.10
Quartz—(See Silica).		
Rosin—Common (280 lbs.)	bbl.	1.60
Best	"	4.10
Salt—N.Y. com. fine abt. 380 lbs	bbl.	.70
N. Y. agricultural	sh. ton	1.50

	Cust. Meas.	Price.
Salt—N. Y. coarse	sh. ton	$2.30
N. Y. dairy and table	"	2.90
Saltpeter—Crude	100 lbs.	3.62½@3.75
Refined	"	4.00@4.25
Samarskite	lb.	1.00
Silica—Best foreign	lg. ton	10.00@11.00
Ground quartz, ord	sh. ton	6.00@8.00
Best	"	12.00@13.00
Lump quartz	"	2.50@4.00
Glass sand	"	2.75
Fire bricks (Blue Welch)	M.	35.00
Silver—Chloride	oz.	.65
Nitrate	"	.40
Oxide	"	.85@1.10
Slate—Ground	sh. ton	7.50@8.25
Sodium—Acetate, com'l	lb.	⅜
Bichromate	"	.06½
Bromide	"	.50
Chlorate, com'l	"	.10
Hyposulphite	100 lbs.	1.60@1.70
Nitrite	lb.	.07½
Peroxide	"	.45
Phosphate	"	.02½
Prussiate	"	.14½
Triphosphate	"	.04
Silicate, conc	"	.05
com'l	"	.01
Sulphate, gran., puri'd	"	.03
Sulphide	"	.01¾
Sulphite	"	.02½
Tungstate, com'l	"	.35
Pure	"	.50
Strontium—Nitrate	"	.08
Sulphur—Roll	100 lbs.	1.75
Flour	"	1.85
Flowers, sublimed	"	2.05
Talc—N. C., 1st grade	sh. ton	13.75
N. Y., Fibrous	"	8.00@9.00
French	lg. ton	16.00
Italian	100 lbs.	1.50@2.00
Tin—Bichloride	lb.	.10@.12
Crystals	"	.20
Muriate, 36°	"	.09
Muriate, 52°	"	.15
Oxide, white, ch. pure	"	.41
Uranium—Oxide	"	1.80@3.00
Zinc—Metallic, ch. pure	"	.09
Carbonate	"	.15
Chloride	"	.05
Dust	"	.07¼
Sulphate	"	.02½

THE RARE ELEMENTS.

Prices given are at makers' works in Germany, unless otherwise noted.

	Cust. Meas.	Price.
Barium—Amalgam	grm.	$1.19
Electrol	"	5.71
Beryllium—Powder	"	5.95
Crystals	"	9.04
Nitrate (N Y.)	lb.	32.00
Boron—Amorphous, pure	grm.	.19
Crystals, pure	"	1.43
Nitrate (N. Y.)	lb.	1.50
Cadmium	kg.	1.90
Calcium	grm.	4.28@5.95
Cerium—Fused	grm.	1.02
Nitrate (N. Y.)	lb.	17.00
Chromium—Fused, Elect.	kg.	5.95
Pure powder 95%	"	1.79
Chem. pure cryst	grm.	.26
Cobalt—(98@99%)	kg.	6.31@7.85
Pure	"	30.94
Didymium—Nitrate (N.Y.)	lb.	60.00
Erbium	grm.	3.09
Nitrate (N. Y.)	lb.	62.00
Germanium—Powder	grm.	33.32
Fused	"	35.70
Glucinum—Powder	"	5.95
Crystals	"	9.04
Nitrate (N. Y.)	oz.	2.59
Indium	grm.	4.05
Iridium	"	1.43
Lanthanum—Powder	"	4.28
Electrol, in globules	"	9.04
Nitrate (N. Y.)	lb.	57.00
Lithium	grm.	2.38
Nitrate (N. Y.)	oz.	.60
Magnesium—In bars	kg.	6.19
In wire	"	9.99
Powdered	"	5.71@6.90
Molybdenum—Fused	grm.	.20
Powder, 95%	kg.	2.62
Niobium	grm.	3.81
Osmium	"	.95
Palladium—Wire	"	.95
Sponge	"	.71
Potassium—In balls	kg.	17.85
Rhodium	grm.	2.62
Rubidium—Pure	"	4.76
Ruthenium—Powder	"	2.38
Rutile—Crude	kg.	.43
Selenium—Com'l powder	"	33.32
Sublimed powder	"	42.84
Sticks	"	35.70
Silicium—Com'l	"	28.56
Pure crystals	"	59.50
Sodium	kg.	1.07
Strontium—Electrol	grm.	6.19
Tantalium—Pure	"	3.57
Tellurium—Ch. p, sticks	kg.	119.00
Powder	"	95.20
Thallium	"	26.18
Thorium—Metallic	grm.	7.85
Nitrate 49@50% (N. Y.)	lb.	5.00
Titanium	kg.	47.60
Uranium	"	190.40
Nitrate (N. Y.)	oz.	.25
Vanadium—Fused	grm.	1.19
Wolfram—Fused, elect	kg.	238.00
Powder, 95@98%	"	1.67
Purest, powder	"	6.43
Yttrium	grm.	3.33
Nitrate (N. Y.)	lb.	62.00
Zirconium—Com'l	kg.	119.00
Nitrate (N. Y.)	lb.	9.00

NOTE.—These quotations are for wholesale lots in New York unless otherwise specified, and are generally subject to the usual trade discounts. This table is revised up to March 3d. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable. See also Market Reviews.